

Order No. MKE0401000C1

B3 B6 B22

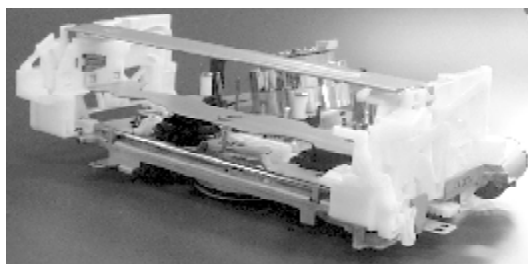
Service Manual

Video Cassette Mechanism

Panasonic **VHS**

R4-MECHANISM-CHASSIS-FOR-PV-MODEL

INTRODUCTION / The R4-Mechanism chassis for PV-Model are built in several Panasonic VCR, DVD-VCR, COMBO and DVD COMBO from year 2004.



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WARNING

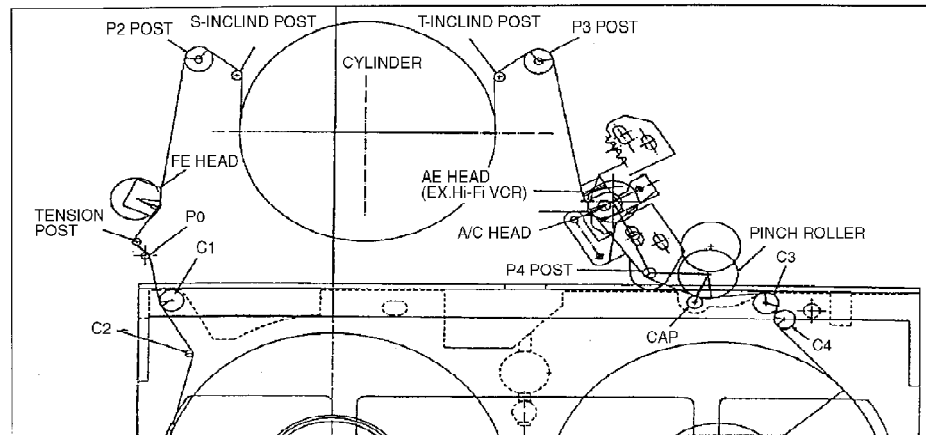
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Panasonic

1. OUTLINE OF R4 MECHANISM

1.1. THE TAPE TRANSPORT PATH

Fig. T1



1.2. NOTES OF REPLACING THE CYLINDER UNIT

1. When replacing Cylinder Unit, perform the TAPE INTERCHANGEABILITY ADJUSTMENT (Linearity Adjustment and X-Value Adjustment) and Clear the Total Elapsed Time to 0, after perform the PG SHIFTER ADJUSTMENT.

1.3. PARTS NAME OF R4-MECHANISM

Fig. T2

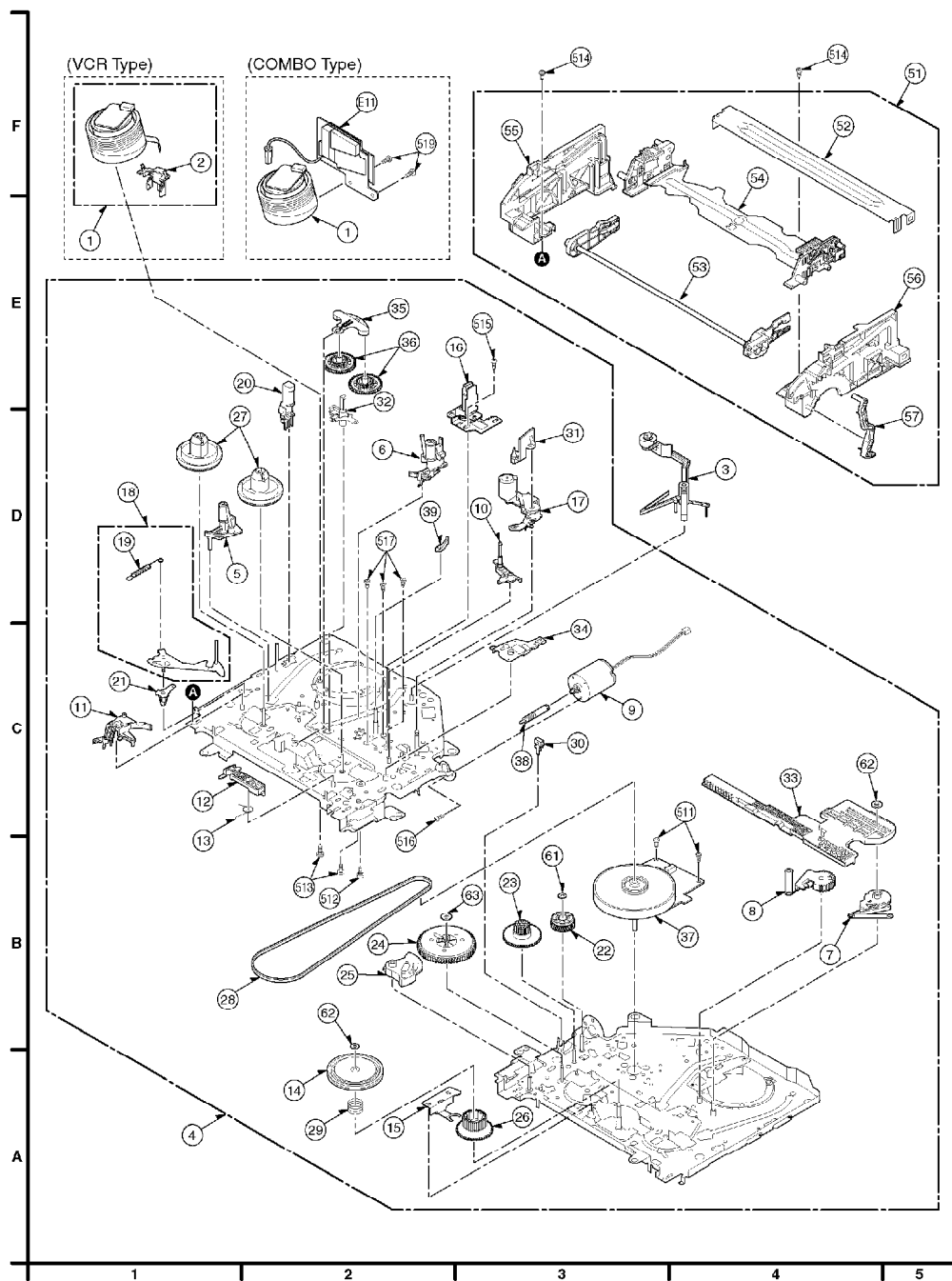


Fig. T3

Ref.No.	Part Name	Ref.No.	Part Name
1	CYLINDER KIT (VCR Type)	51	CASSETTE UP ASS'Y
1	CYLINDER UNIT (COMBO Type)	52	TOP PLATE
2	FPC HOLDER (VCR Type)	53	MAIN SHAFT UNIT
3	CLEANER ARM UNIT	54	CASSETTE HOLDER UNIT
4	MECHANICAL CHASSIS SUB ASS'Y	55	SIDE PLATE L
5	SUPPLY SHAFT HOLDER UNIT	56	SIDE PLATE R2
6	TAKE UP SHAFT HOLDER UNIT	57	OPENER LEVER 2
7	SUPPLY LOADING ARM UNIT	61	CUT WASHER
8	TAKE UP LOADING ARM UNIT	62	CUT WASHER
9	LOADING MOTOR UNIT	63	CUT WASHER
10	P5 ARM UNIT		
11	SUPPLY BRAKE ARM UNIT	511	TAPPING SCREW,STEEL
12	TAKE UP BRAKE ARM UNIT	512	SCREW,STEEL
13	TAKE UP BRAKE SPRING	513	SCREW,STEEL
14	CENTER CLUTCH UNIT	514	TAPPING SCREW,STEEL
15	CHANGE LEVER UNIT	515	SCREW,STEEL
16	AUDIO CONTROL/ERASE HEAD UNIT	516	SCREW,STEEL
17	PINCH ARM UNIT	517	SCREW,STEEL
18	TENSION ARM UNIT	519	SCREW,STEEL (COMBO Type)
19	TENSION SPRING		
20	FULL ERASE HEAD	E11	HEAD AMP C.B.A. (COMBO Type)
21	TENSION ARM BOSS		
22	TORQUE CLUTCH UNIT		
23	INTERMEDIATE GEAR		
24	MAIN CAM GEAR		
25	SECTOR GEAR UNIT		
26	CHANGE GEAR		
27	REEL TABLE		
28	CAPSTAN BELT		
29	CHANGING GEAR SPRING		
30	WORM BEARING 2		
31	OPENER PIECE		
32	LED PRISM		
33	MAIN LEVER		
34	PINCH CHARGE ARM		
35	IDLER ARM		
36	IDLER GEAR		
37	CAPSTAN ASS'Y		
38	WORM GEAR 2		
39	P4 CAP 2		

2. METHOD FOR LOADING / UNLOADING OF MECHANISM

2.1. REMOVAL OF CASSETTE TAPE

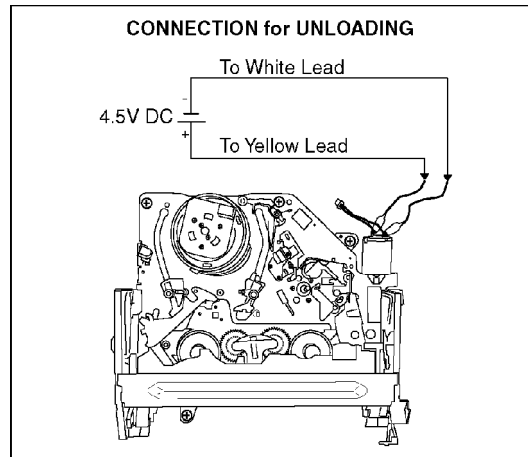
When the cassette tape could not be ejected from a malfunction, There are 3 ways to remove a cassette tape.

2.1.1. Removal by manual operation by rotating the Loading Motor with the batteries.

1. Disconnect the AC plug, and remove to the state of Main C.B.A. with Mechanism Unit by referring the Service Manual of the corresponding model.

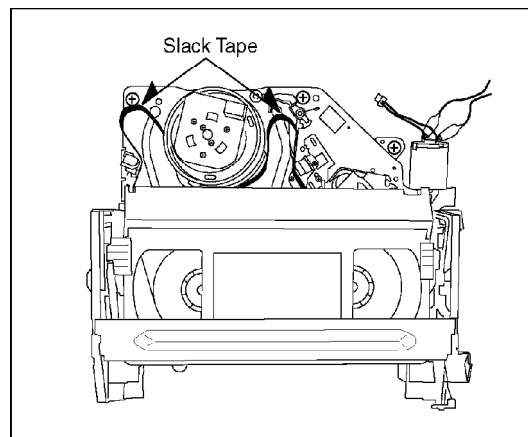
2. Disconnect the connector of Loading Motor.
3. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor as shown in **Fig. S1**.

Fig. S1



4. Stop unloading just before unloading is about to be completed. Then the tape becomes slack as shown in **Fig. S2**.

Fig. S2



5. Rotate the S-Reel by a small minus screwdriver (**Fig. S3**) to remove the tape slacks as shown in **Fig. S4**.

Fig. S3

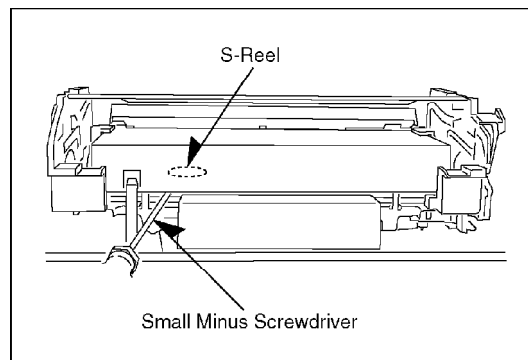
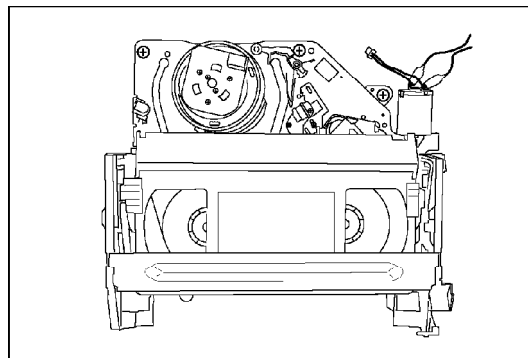
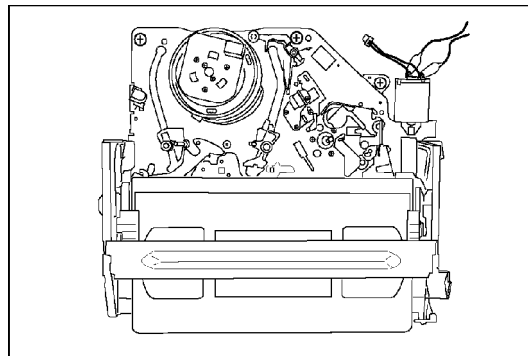


Fig. S4



6. Then unload again to remove the cassette tape as shown in **Fig. S5**.

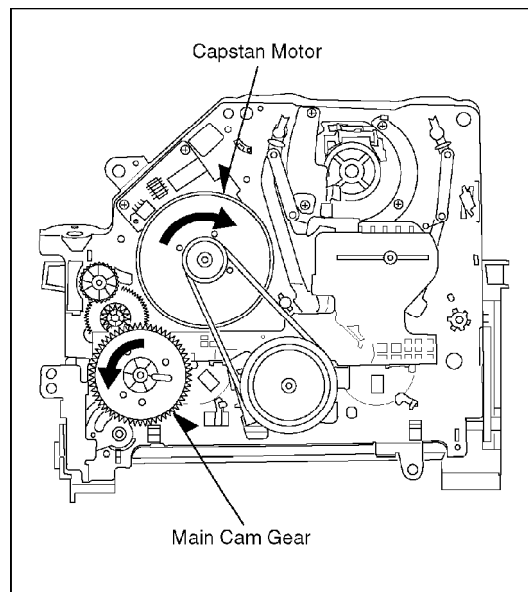
Fig. S5



2.1.2. Removal by manual operations. (When the Main Cam Gear does not lock.)

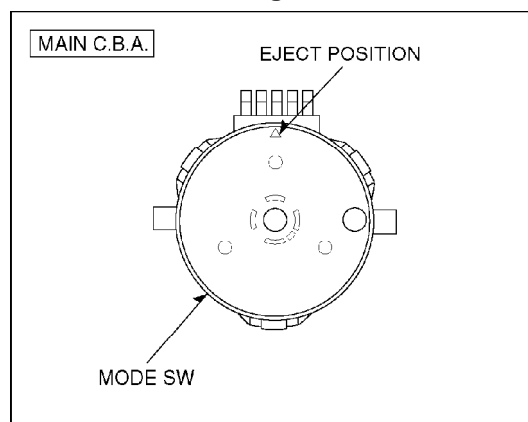
1. Disconnect the AC plug, and remove the Mechanism Chassis Unit by referring the Service Manual of the corresponding model.
2. Rotate the Main Cam Gear counter-clockwise (**Fig. S6**) until just before the unloading would be completed as shown in **Fig. S2**.
3. Rotate the Capstan Motor clockwise (**Fig. S6**) to remove the tape slacks as shown in **Fig. S4**.

Fig. S6



4. Rotate the Main Cam Gear counter-clockwise again (**Fig. S6**) to remove the cassette-tape as shown in **Fig. S5**.
5. Set the MODE SW to EJECT POSITION certainly as shown in **Fig. S7**.

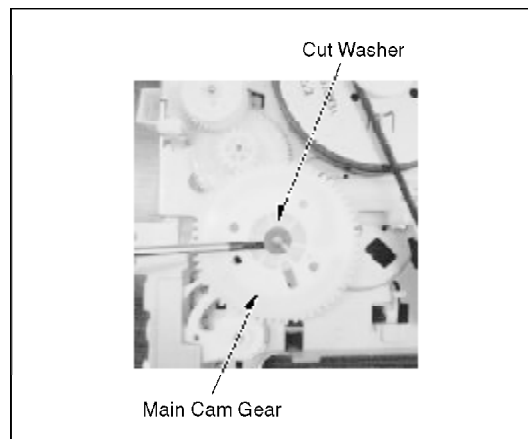
Fig. S7



2.1.3. Removal by manual operations. / (When the Main Cam Gear lock)

1. Disconnect the AC plug, and remove the Mechanism Chassis Unit by referring the Service Manual of the corresponding model.
2. Remove a washer of Main Cam Gear with a previous thin minus screw driver and so on. < **Fig. S8** >

Fig. S8



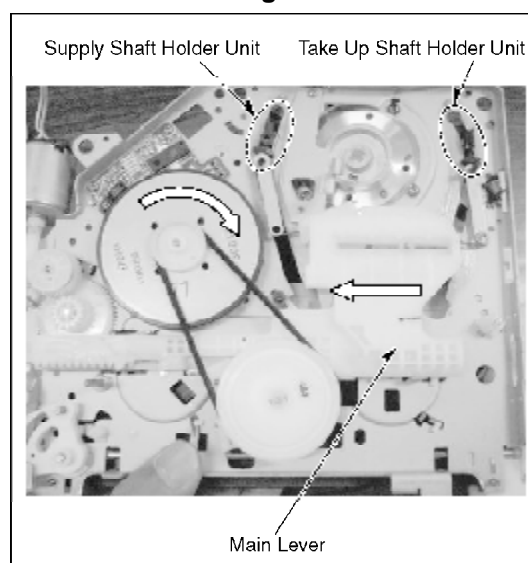
3. Fix by hand so that a cassette tape does not fall, and remove a Main Cam Gear. < **Fig. S9** >

Fig. S9



4. Move a Main Lever in the direction of an arrow, and move a Shaft Holder near the position shown in the following figure.

Fig. S10



5. Remove the tape from the tape path.
6. Rotate the Capstan Motor clockwise to remove the tape slacks.
7. Furthermore, move the Main Lever in the direction of an arrow, and eject a cassette tape.
8. Install the Main Cam Gear.

NOTE:

When install the Main Cam Gear, the Main Lever, the Sector Gear Unit and the Main Cam Gear need to be phase adjusted.

Refer to “6.2. ASSEMBLY AND PHASE ADJUSTMENT OF MECHANICAL CHASSIS SUB ASS'Y”

2.2. SERVICE MODE

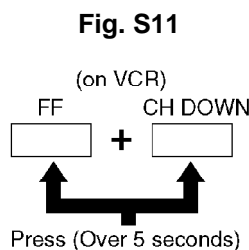
In service mode, detection of the Supply & Takeup Photo Transistors, Reel Sensor, and Cylinder Lock can be inhibited.

In this mode, Mechanism movement can be confirmed. When removing Cassette Up Ass'y, it can be confirmed without a cassette.

<VCR type>

To enter Service Mode:

Press and hold FF button and CH DOWN button on VCR together over 5 seconds.



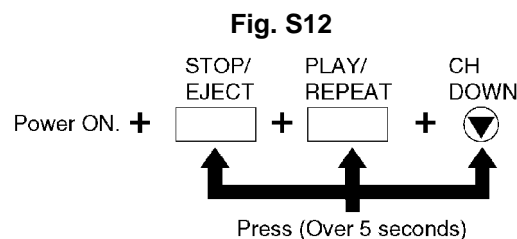
The power comes on and the unit goes into Service Mode.

To release from this mode, disconnect AC Plug.

<COMBO type>

To enter Service Mode:

Press and hold STOP/EJECT, PLAY/REPEAT, and CH DOWN buttons on the unit together over 5 seconds in power on condition.



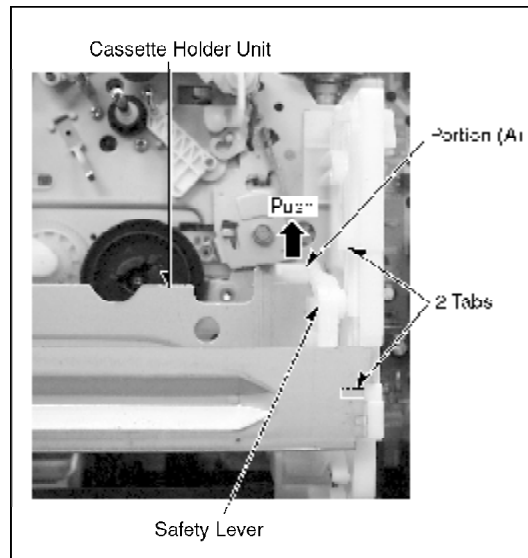
The unit goes in to Service Mode

To release from this mode, disconnect AC Plug.

NOTE:

When loading with no cassette tape, push the portion (A) on Cassette Holder Unit so that the Safety Lever clear the 2 Tabs as shown in **Fig. S13**.

Fig. S13

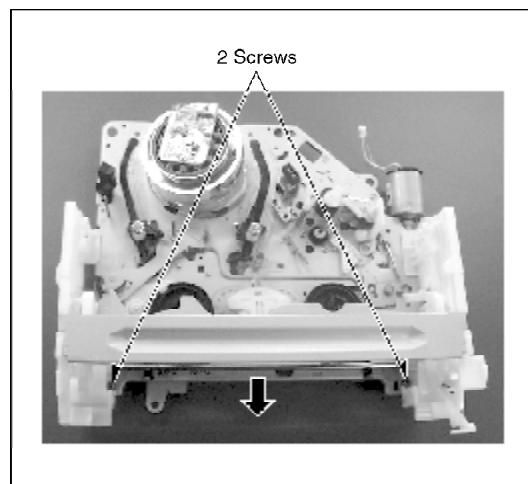


3. REMOVAL OF CASSETTE UP ASS ' Y, CYLINDER UNIT & CLEANER ARM UNIT

3.1. REMOVAL OF CASSETTE UP ASS ' Y

1. Remove 2 Screws to Slide up in direction of the arrow, and Cassette Up Ass'y is removed.

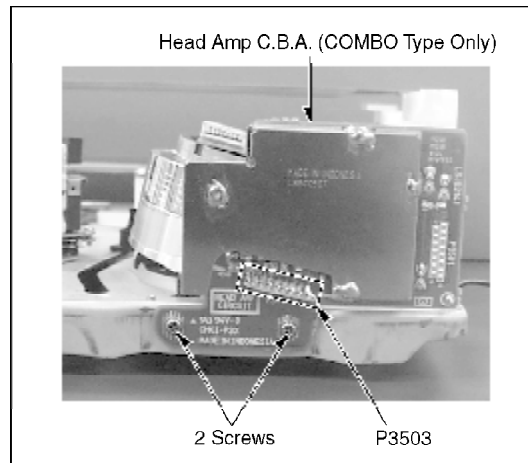
Fig. R1



3.2. REMOVAL OF CYLINDER UNIT

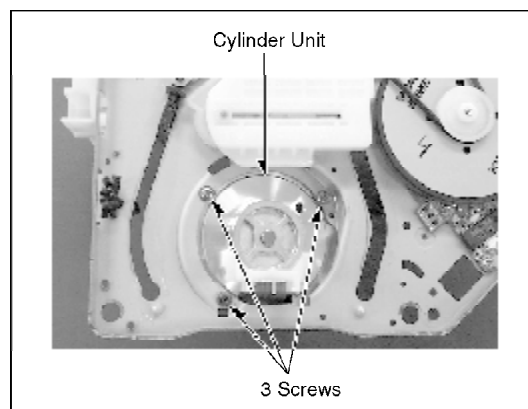
1. Remove 2 Screws and unsolder the P3503 to remove Head Amp C.B.A. (COMBO Type Only).

Fig. R2



2. Remove 3 Screws to remove Cylinder Unit.

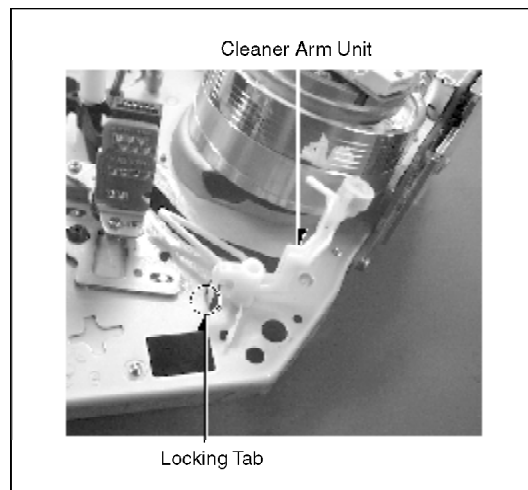
Fig. R3



3.3. REMOVAL OF CLEANER ARM UNIT

1. Unlock Locking Tab to remove Cleaner Arm Unit.

Fig. R4

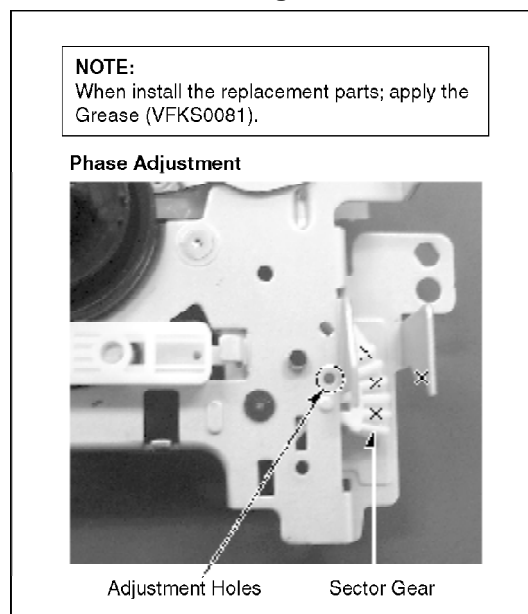


4. INSTALLATION OF CASSETTE UP ASS'Y, CYLINDER UNIT & CLEANER ARM UNIT

4.1. INSTALLATION OF CASSETTE UP ASS'Y

1. Confirm the Mechanism Phase so that see through the Adjustment Holes of Sector Gear and Chassis.

Fig. I1



2. Place the Cassette Holder Unit on front end of the Cassette Up Ass'y.
3. Insert the convex portions of the Cassette Up Ass'y ([Fig. I3](#)) into the grooves of Chassis ([Fig. I2](#)).

Fig. I2

NOTE:

When install the replacement parts; apply the Grease (VFKS0081).

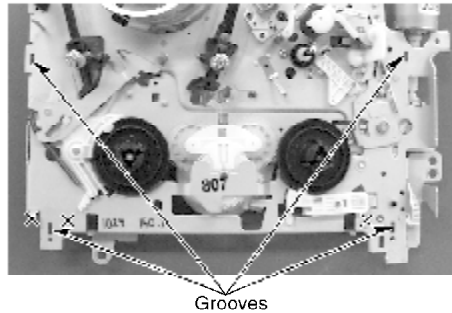
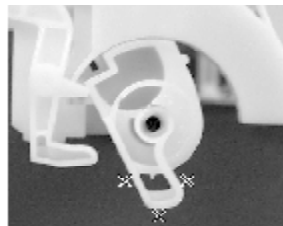


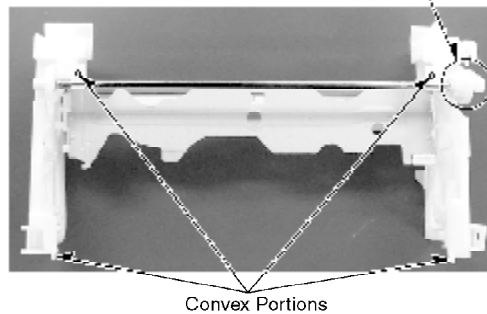
Fig. I3

NOTE:

When install the replacement parts; apply the Grease (VFKS0081).

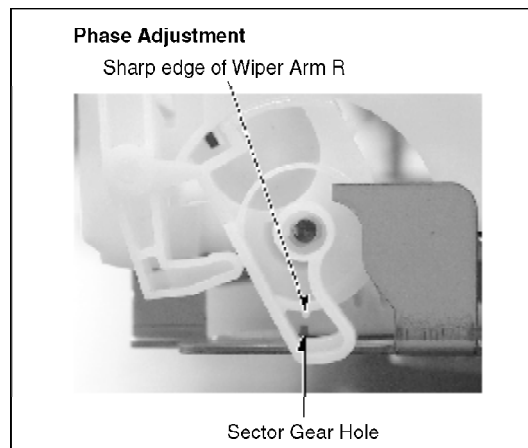


<Bottom Side of Cassette Up Ass'y>



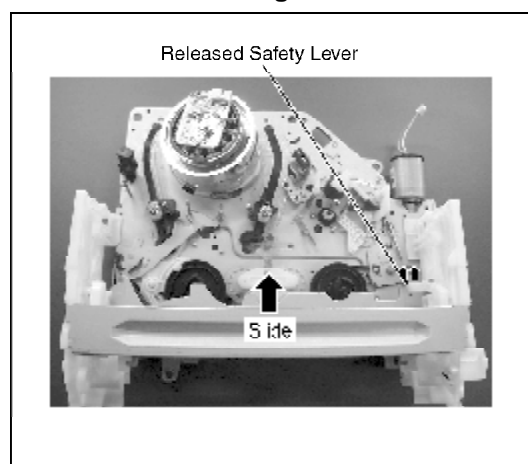
4. Reconfirm Cassette Up Ass'y is correct phase (Sharp edge of Wiper Arm R is in line with the Sector Gear Hole).

Fig. I4



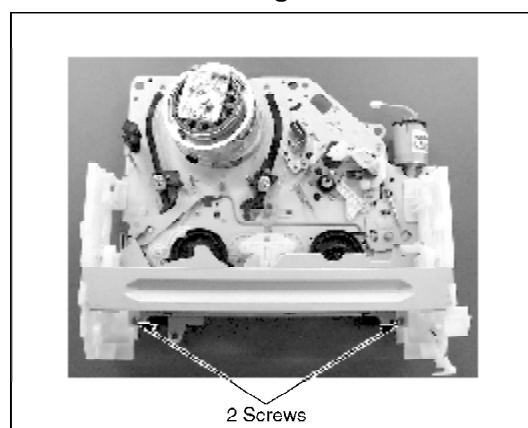
5. Slide Cassette Up Ass'y in the direction of the arrow, after released Safety Lever.

Fig. I5



6. Tighten the 2 Screws.

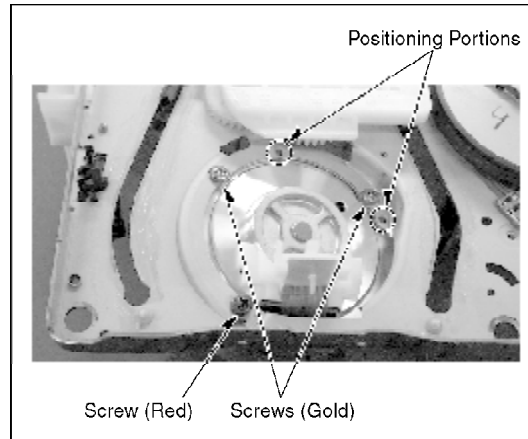
Fig. I6



4.2. INSTALLATION OF CYLINDER UNIT

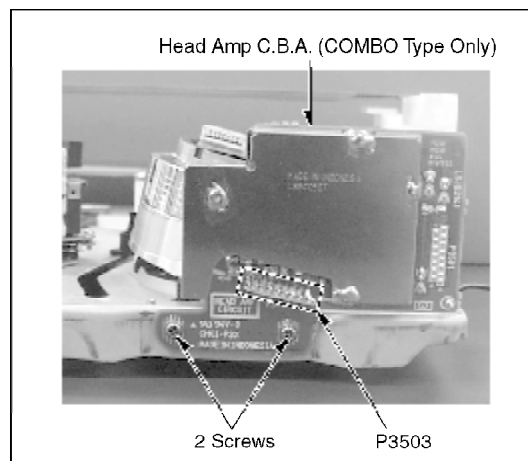
1. Set 2 small holes of a Cylinder bottom to 2 bosses on a Chassis, and tighten 3 Screws.

Fig. I7



2. Install the Head Amp C.B.A., and tighten 2 Screws and solder the P3503.

Fig. I8



NOTE:

When replacing Cylinder Unit, perform the TAPE INTERCHANGEABILITY ADJUSTMENT (Linearity Adjustment and X-Value Adjustment) and Clear the Total Elapsed Time to 0, after perform the PG SHIFTER ADJUSTMENT.

4.2.1. ATTENTION FOR REPLACING THE CYLINDER UNIT (VCR Type Only)

CAUTION:

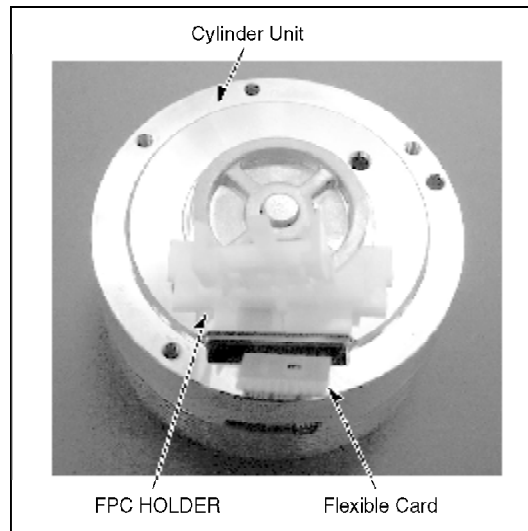
Handle the Cylinder Flexible Card with care. When it damaged, you should replace it with a new Cylinder Unit.

1. Put the gloves on your hands.

2. Turn the Cylinder Unit over.

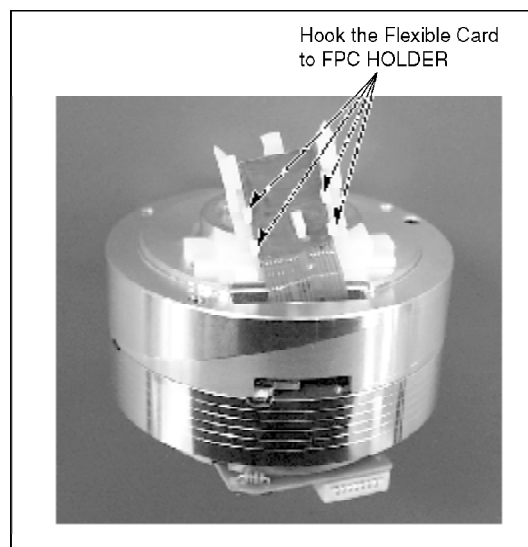
3. Insert the FPC HOLDER to the Cylinder Unit.

Fig. I9



4. Hook the Flexible Card to the FPC HOLDER.

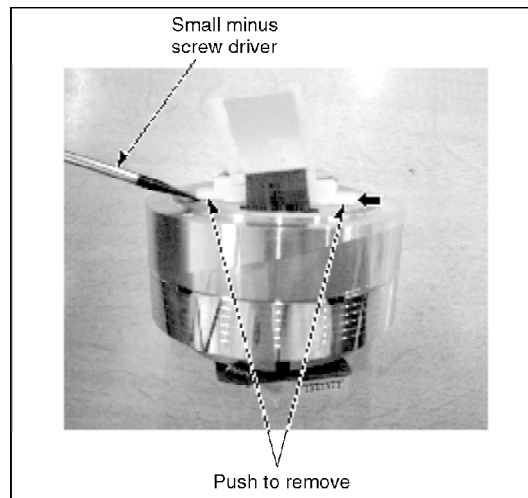
Fig. I10



NOTE:

- 1. When removing the FPC HOLDER, push stopper portion of the FPC HOLDER with a small minus screw driver and so on. And then pay attention for not to scratch the Cylinder and not to break the Head Chip.**
- 2. FPC HOLDER is not reuseable.**
If removed, install a new one.

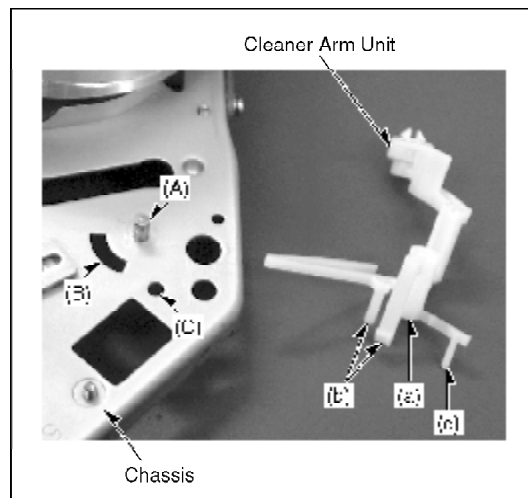
Fig. I11



4.3. INSTALLATION OF CLEANER ARM UNIT (Only a model with a Cleaner Arm Unit)

- 1. Insert (a) - (c) of Cleaner Arm Unit to (A) - (C) of Chassis.**

Fig. I12

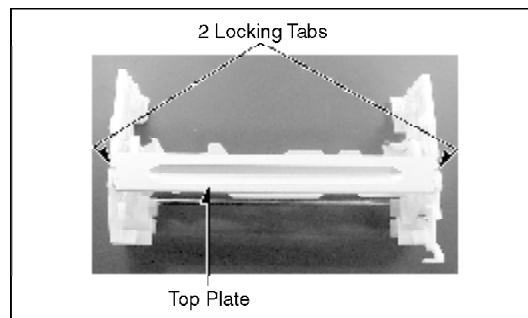


5. DISASSEMBLY / ASSEMBLY METHOD FOR CASSETTE UP ASS ' Y

5.1. DISASSEMBLY OF CASSETTE UP ASS ' Y

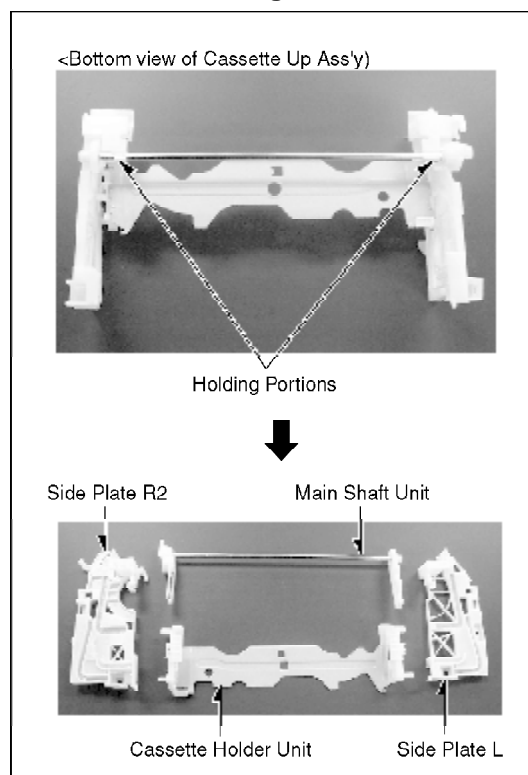
- 1. Unlock 2 Locking Tabs to remove the Top Plate.**

Fig. E1



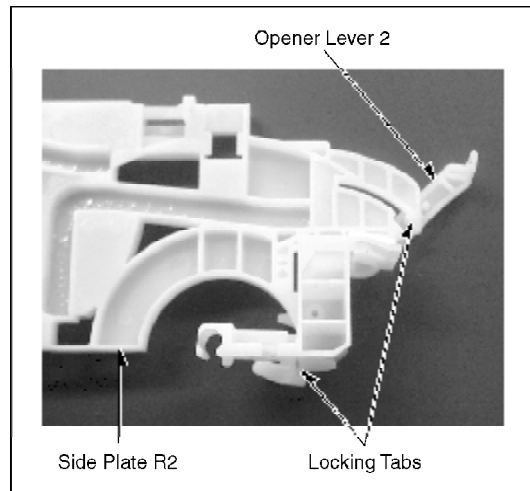
2. Remove the Main Shaft Unit from Holding Portions of Side Plate L and Side Plate R2.

Fig. E2



3. Unlock 2 Locking Tabs to remove Opener Lever 2.

Fig. E3

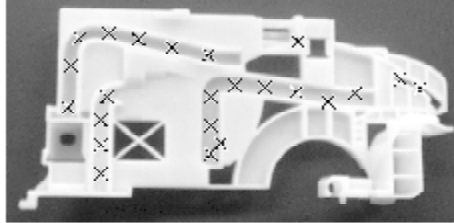


5.2. ASSEMBLY OF CASSETTE UP ASS ' Y

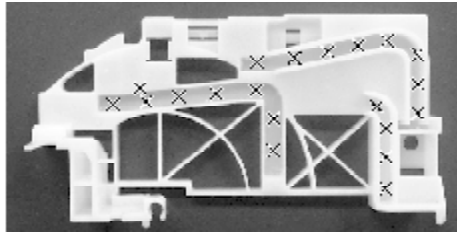
Fig. F1

NOTE:
When install the replacement parts; apply the Grease (VFKS0081).

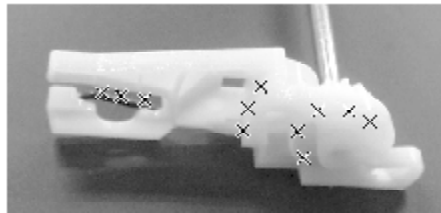
<Inside of Side Plate R2>



<Inside of Side Plate L>



<Right Side of Main Shaft Unit>



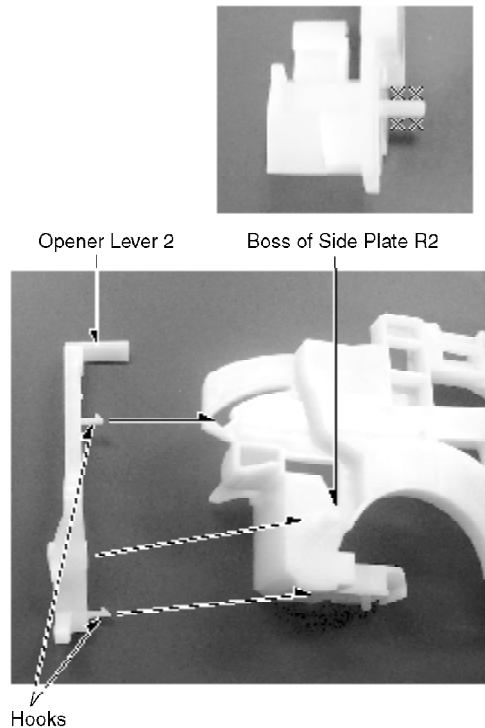
<Left Side of Main Shaft Unit>



1. Install the Opener Lever 2 into the boss of Side Plate R2 and Fit the Hooks.

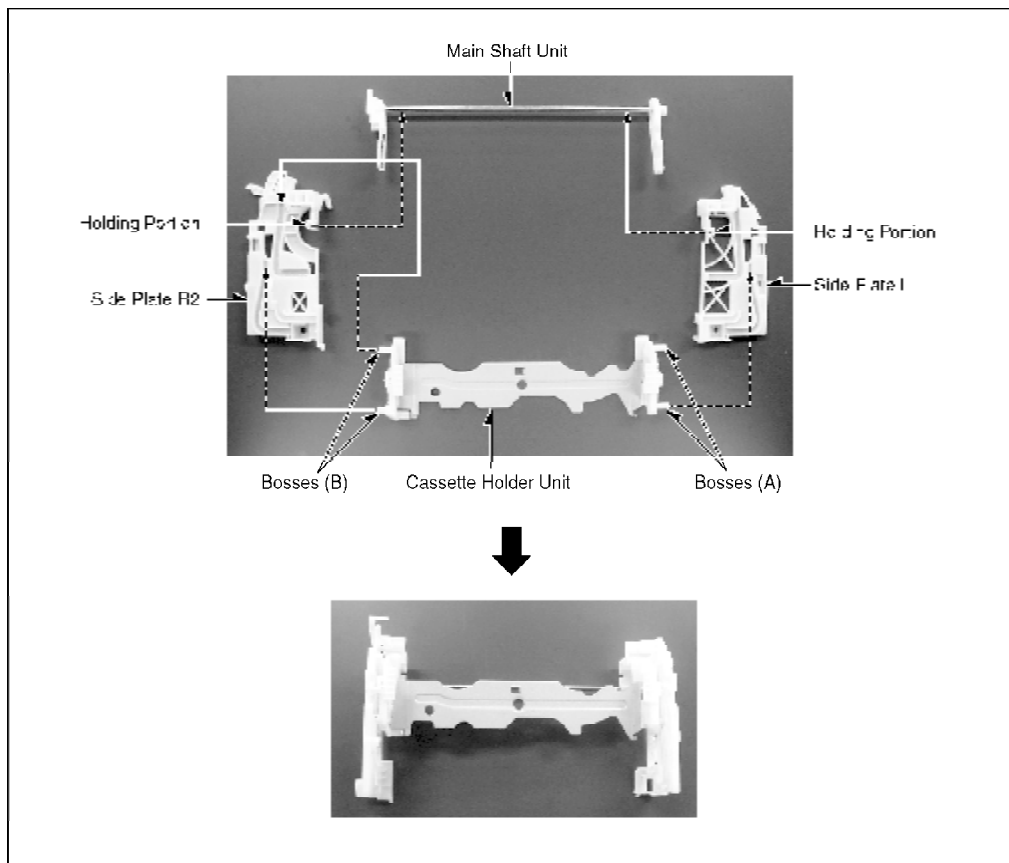
Fig. F2

NOTE:
When install the replacement parts; apply the Grease (VFKS0081).



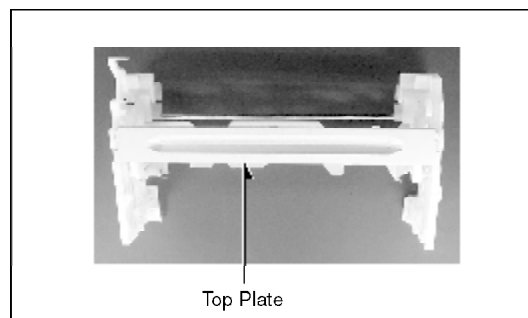
2. Install the Main Shaft Unit to Holding Portions of Side Plate R2 and Side Plate L.
3. Install 2 bosses (A) of Cassette Holder Unit in the slots of Side Plate L and Main Shaft Unit.
Next, install 2 bosses (B) in the slots of Side Plate R2 and Main Shaft Unit.

Fig. F3



4. Install the Top Plate.

Fig. F4



6. DISASSEMBLY / ASSEMBLY METHOD FOR MECHANICAL CHASSIS SUB ASS ' Y

6.1. DISASSEMBLY OF MECHANICAL CHASSIS SUB ASS ' Y

1. Remove the Take Up Brake Spring, T Brake Arm UNIT and Reel Table (Take-up).

Caution:

Do not to touch brake surface of Reel Table.

Fig. D1

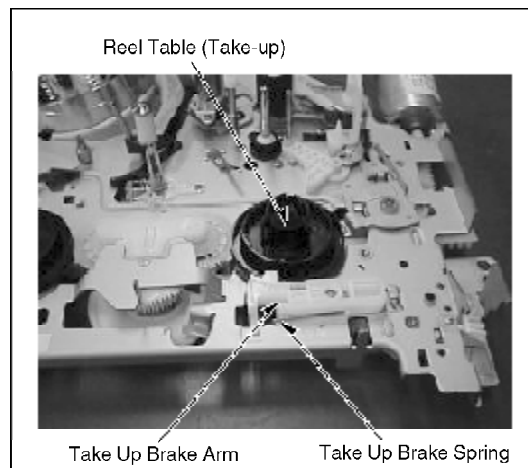
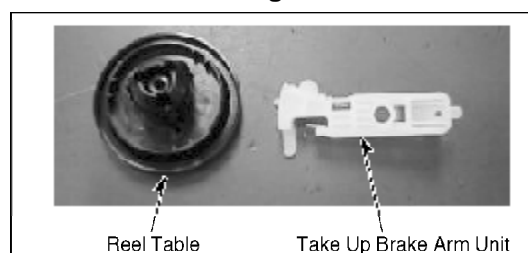


Fig. D2



2. Keep Pressing Take up Shaft Holder Unit, slowly turn LED Prism clockwise up to 45° to remove.

Caution:

The LED Prism is made of soft material, handle with care when removing.

3. Remove the Idler Arm and Idler Gears.

Fig. D3

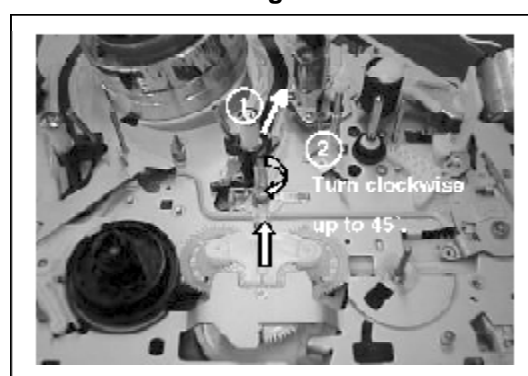
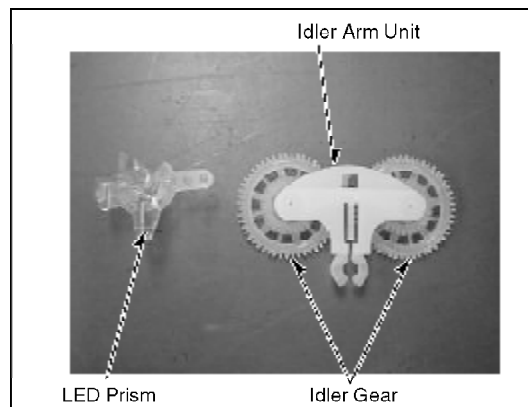
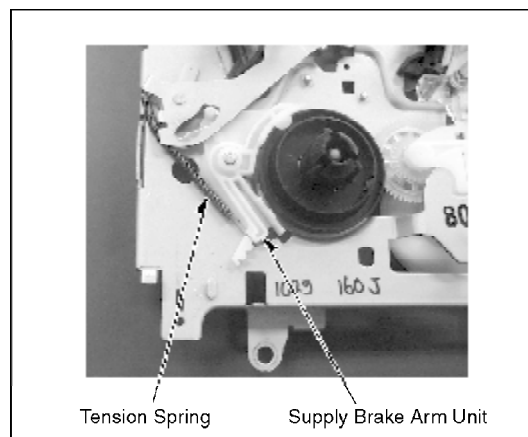


Fig. D4



4. Release the Tension Spring end to tip end of Supply Brake Arm Unit.

Fig. D5



5. Unlock the Hooks of the boss on rear side of mechanism chassis to remove the Tension Arm Unit, and remove the Supply Brake Arm Unit and Reel Table (Supply).

Caution:

Do not to touch brake surface of Reel table.

Fig. D6

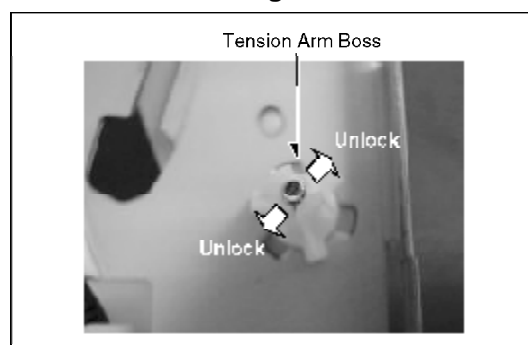
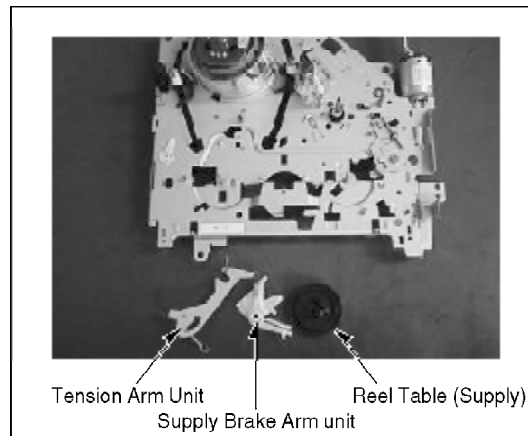


Fig. D7



6. In order to cancel a lock, insert a previous thin minus screw driver etc. in the hole shown in **Fig. D8**, and press down from a top.

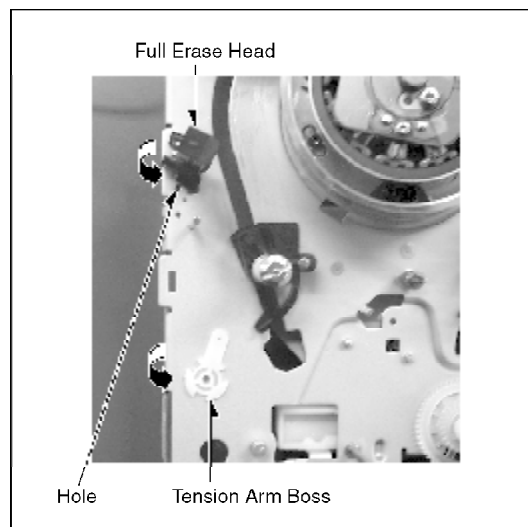
And then, slowly turn Full Erase Head counter-clockwise to remove.

Caution:

Do not to scratch tape running surface.

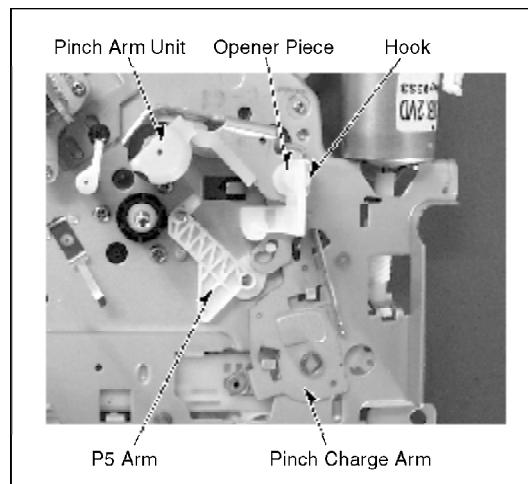
7. Slowly turn Tension Arm Boss counter-clockwise to remove.

Fig. D8



8. Unlock the Hook to remove the Opener Piece, and remove the Pinch Arm Unit and P5 Arm Unit in order.

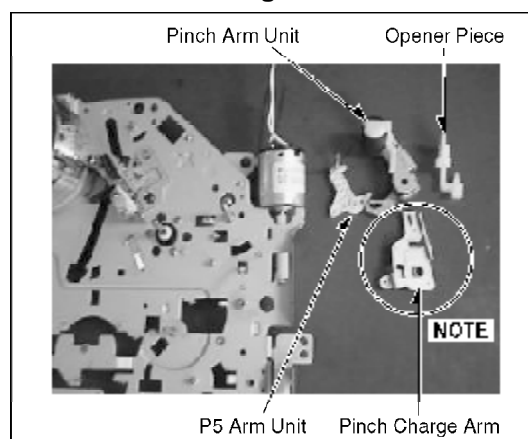
Fig. D9



Note:

Remove of the Pinch Charge Arm is performed in step 12.

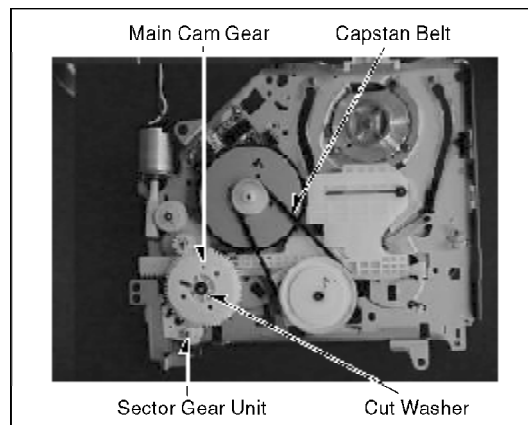
Fig. D10



9. Remove the Cut Washer of the Main Cam Gear, and remove the Main Cam Gear and Sector Gear Unit.

10. Remove the Capstan Belt.

Fig. D11



- 11. Remove the Cut Washer of the Center Clutch, and remove Center Clutch Unit, Change Lever Unit and Change Gear Spring, keep paying attention to do not lose the Change Gear Spring and the Cut Washer.**

Fig. D12

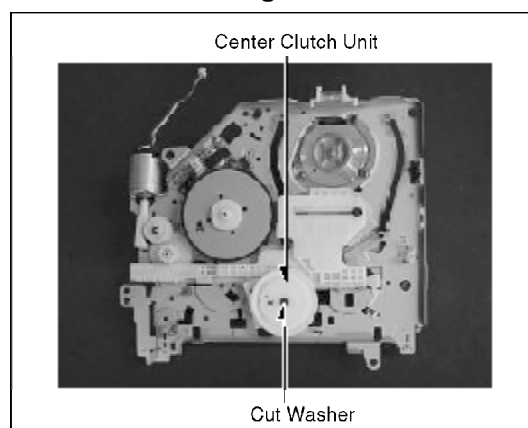
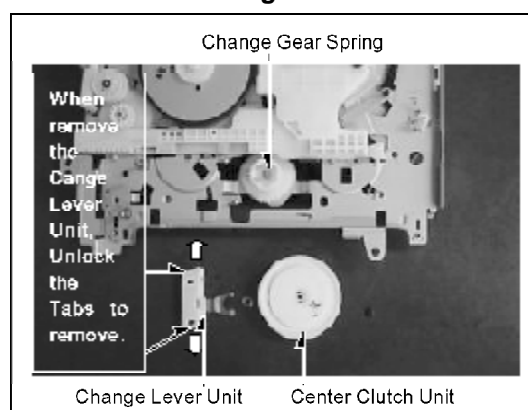


Fig. D13



- 12. Remove the Cut Washer, and push the Main Lever rightward to the limit and remove the Main Lever, and turn over the Mechanism Chassis and remove the Pinch Charge Arm shown in [Fig. D9](#).**

Fig. D14

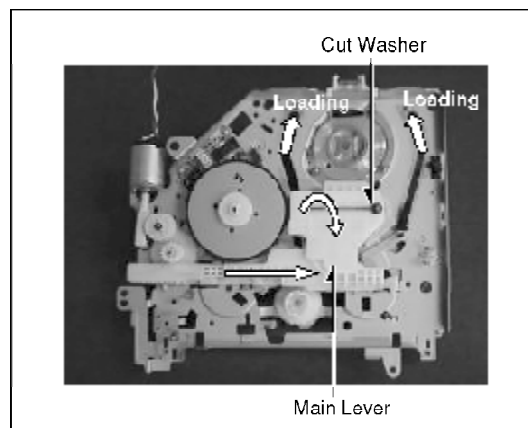
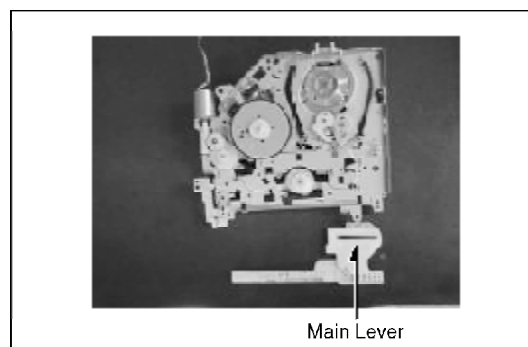


Fig. D15



13. Remove the Supply Loading Arm Unit and Take Up Loading Arm Unit.

Fig. D16

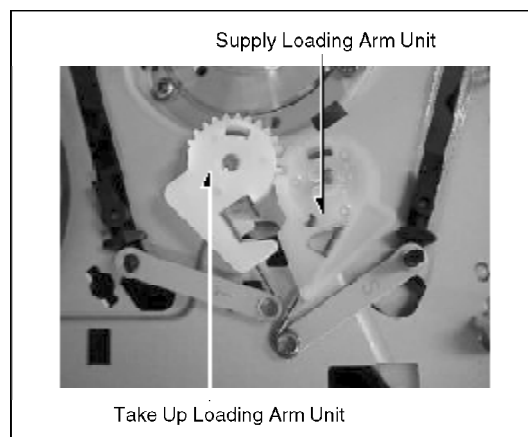
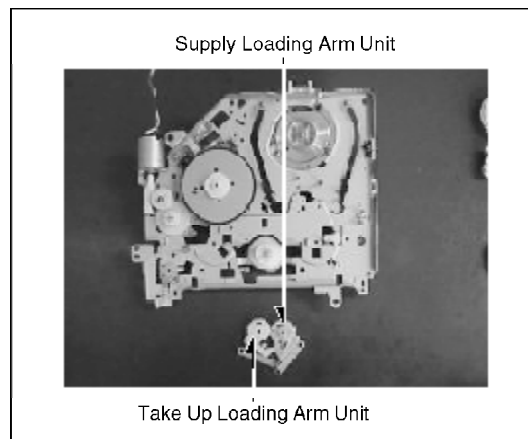
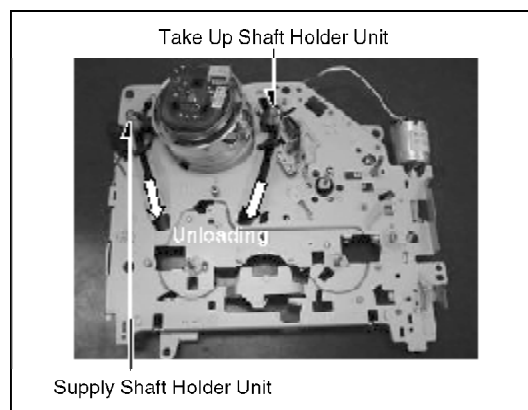


Fig. D17



14. Pull the Supply Shaft Holder Unit and Take Up Shaft Holder Unit toward you to the limit, and remove them.

Fig. D18



15. Remove the Cut Washer of the Torque Clutch Unit, and remove the Torque Clutch Unit, Intermediate Gear and Change Gear.

Fig. D19

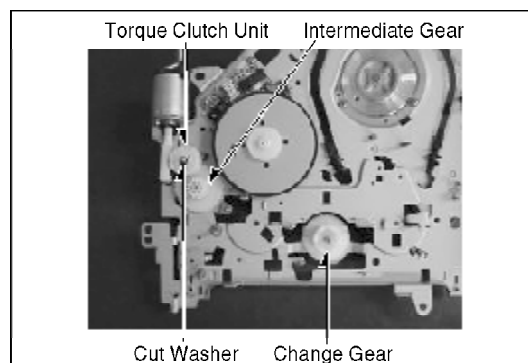
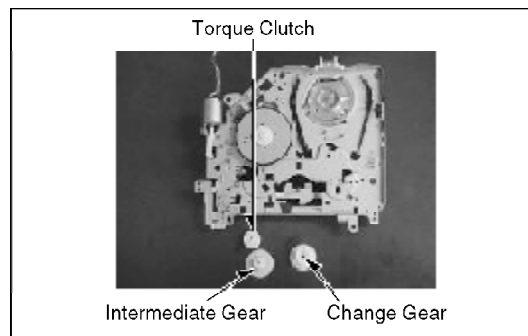


Fig. D20



16. Remove 2 Screws for the Stator and 3 Screws for the Capstan ASS'Y, and remove the Capstan ASS'Y.

Fig. D21

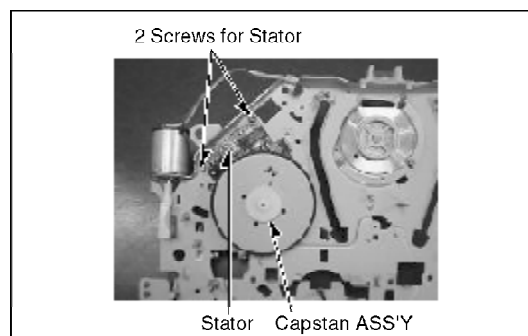
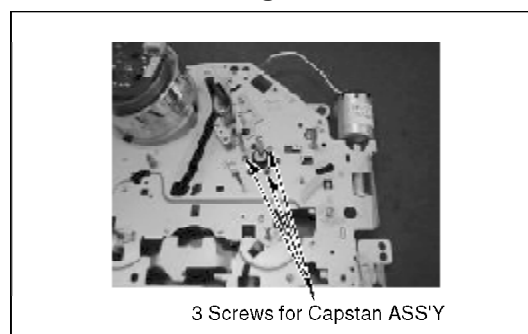


Fig. D22



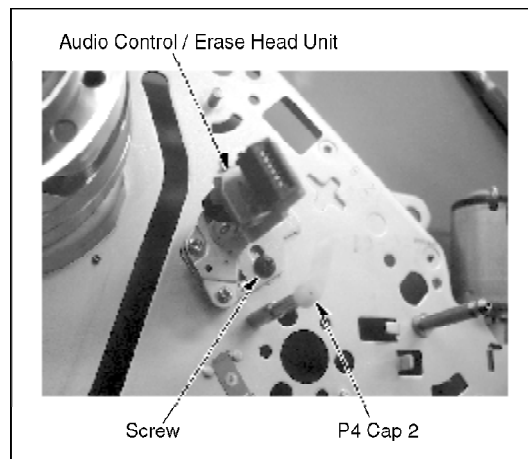
17. Remove the P4 Cap 2.

18. Remove a Screw for Audio Control/ Erase Head Unit, and remove the Audio Control/ Erase Head Unit.

Caution:

Do not to scratch or touch on the Head.

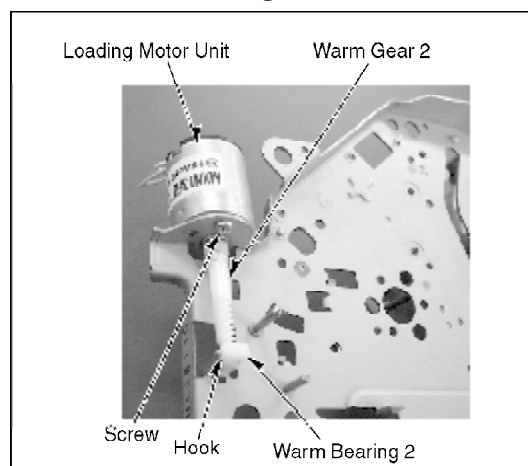
Fig. D23



19. Remove a Screw for the Loading Motor, and remove the Loading Motor Unit and Worm Gear 2.

20. Unlock the Hook to remove the Worm Bearing 2.

Fig. D24



6.2. ASSEMBLY AND PHASE ADJUSTMENT OF MECHANICAL CHASSIS SUB ASS ' Y

Fig. A1

NOTE:

When install the replacement parts; apply the Grease (VFKS0081).

<Top Side of Chassis>

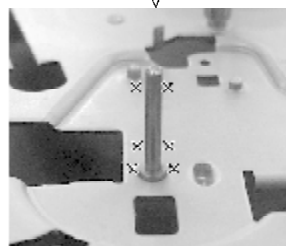
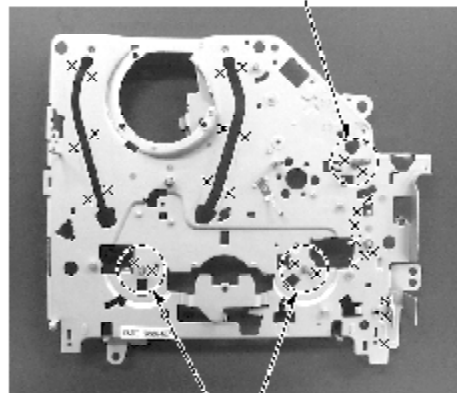
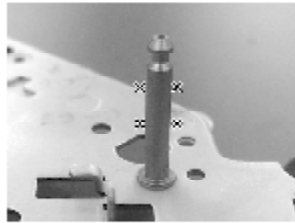
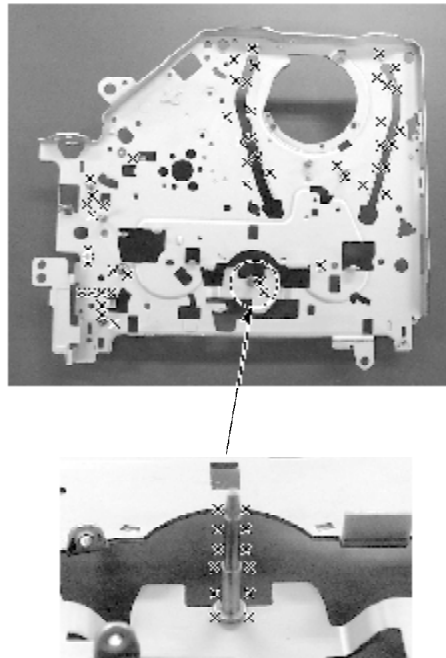


Fig. A2

NOTE:
When install the replacement parts; apply the Grease (VFKS0081).

<Bottom Side of Chassis>



1. Install the Worm Bearing 2 into Chassis.
2. Set the Loading Motor Unit and Worm Gear 2 not to scratch the Worm Gear 2, and tighten the Screw with the Loading Motor Unit.

Fig. A3

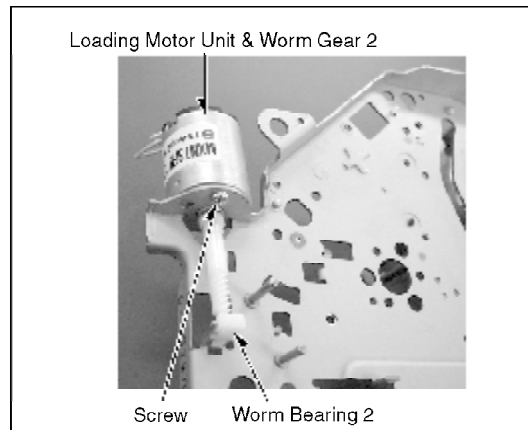
NOTE:
When install the replacement parts; apply the Grease (VFKS0081).



Loading Motor Unit

Worm Gear 2

Fig. A4

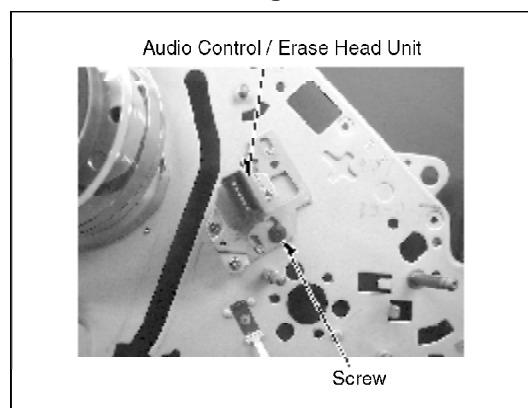


- 3. Install the Audio Control/ Erase Head Unit and tighten the Screw with Audio Control/ Erase Head Unit.**

Caution:

Do not to scratch or touch on the Head.

Fig. A5



- 4. Install the Capstan ASS'Y, and tighten 5 Screws for the Capstan Ass'y by sequence 1, 2, 3, 4, 5.**

Fig. A6

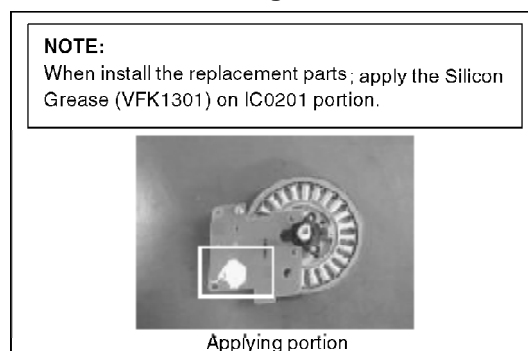


Fig. A7

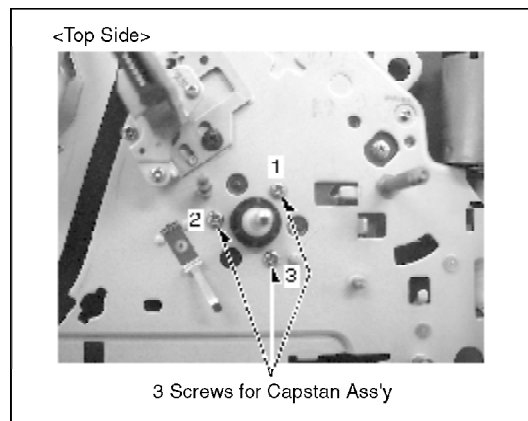
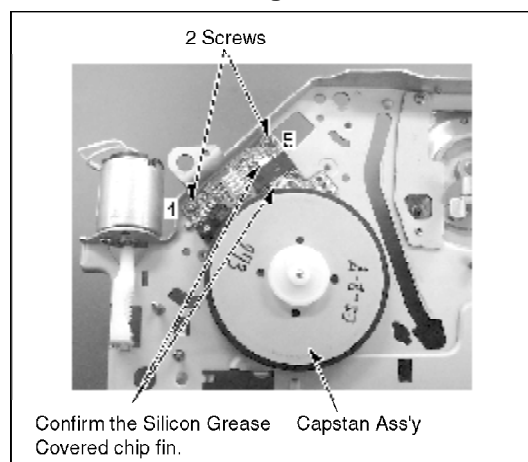


Fig. A8



5. Install Pinch Charge Arm, P5 Arm Unit, Pinch Arm Unit and Opener Piece in order.

Fig. A9

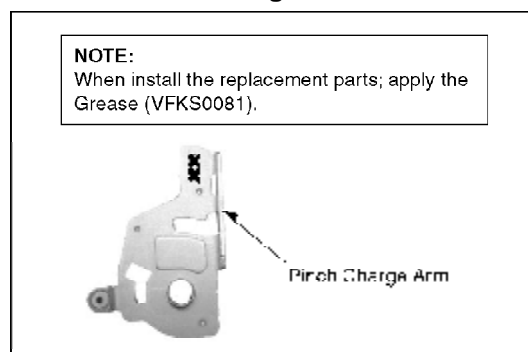


Fig. A10

NOTE:

When install the replacement parts; apply the Grease (VFKS0081).

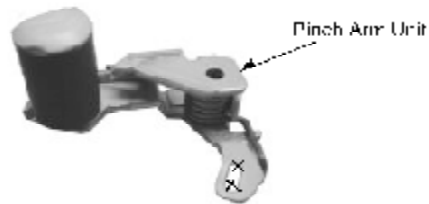
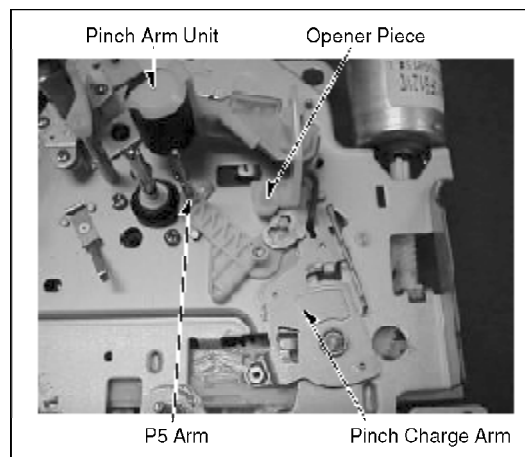


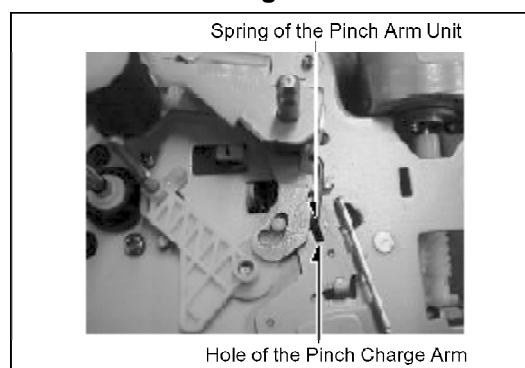
Fig. A11



Note:

Install the Spring of Pinch Arm Unit into the Hole of Pinch Charge Arm as shown in **Fig. A12**.

Fig. A12



6. Install the Supply Shaft Holder Unit and Take Up Shaft Holder Unit.

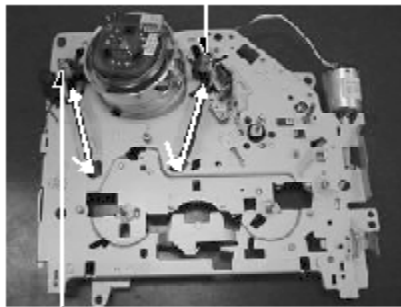
Fig. A13

NOTE:
When install the replacement parts; apply the Grease (VFKS0081).



Fig. A14

Take Up Shaft Holder Unit



Supply Shaft Holder Unit

7. Install the Intermediate Gear, Torque Clutch Unit and Cut Washer in order.

8. Install the Change Gear.

Fig. A15

NOTE:
When install the replacement parts; apply the Grease (VFKS0081).

Intermediate Gear

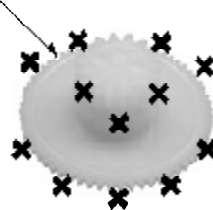
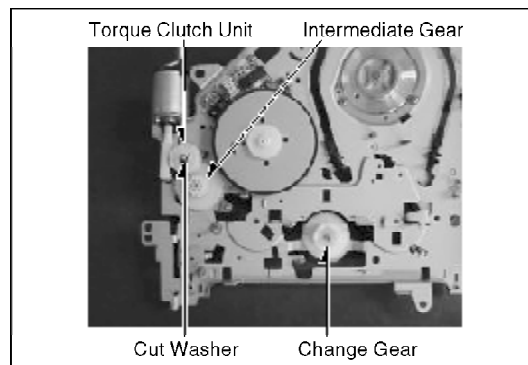
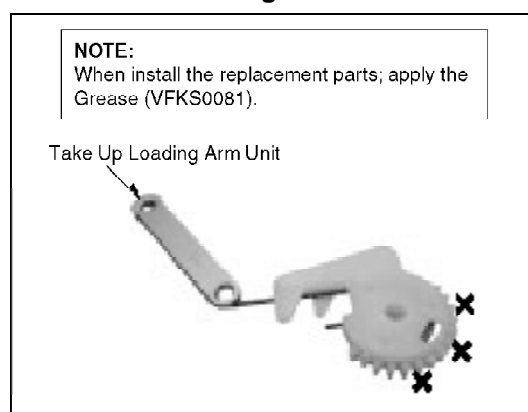


Fig. A16



9. Install the Take Up Loading Arm Unit.

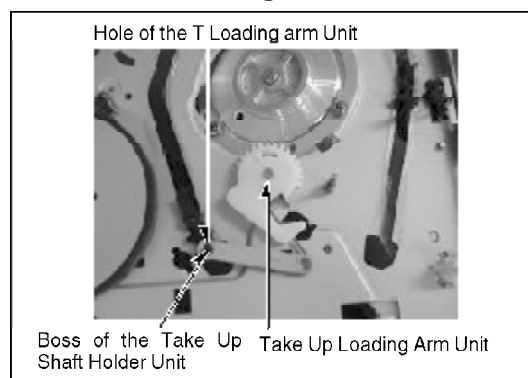
Fig. A17



Note:

Install the boss of the Take Up Shaft Holder Unit into the Hole of the Take Up Loading arm Unit.

Fig. A18



10. Install the Supply Loading Arm Unit, adjusting the phase between Take Up Loading Arm Gear and the Supply Loading Arm Gear as shown in **Fig. A20**.

Fig. A19

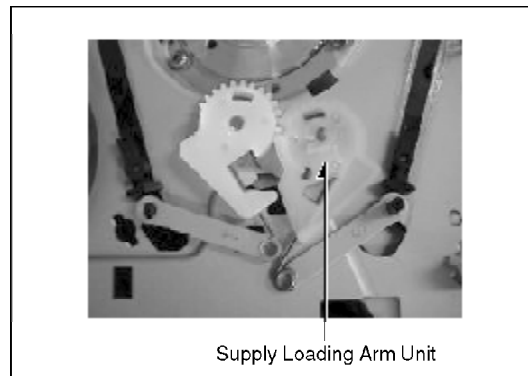
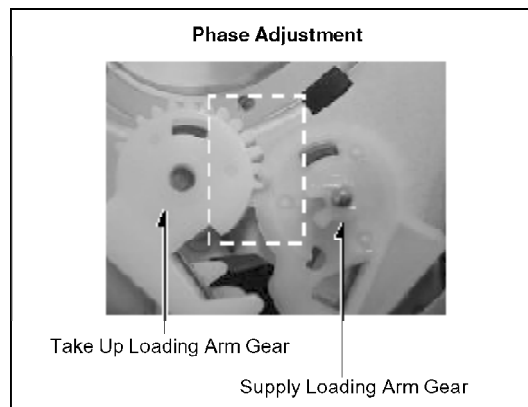
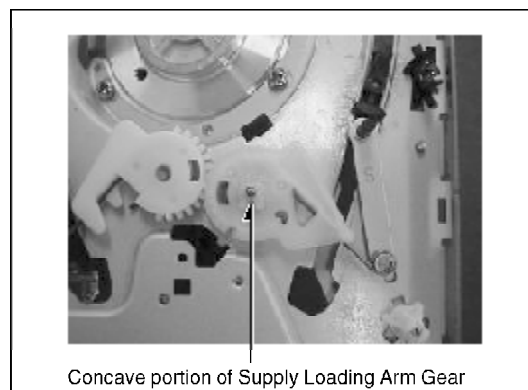


Fig. A20



- 11. Set the Concave portion of Supply Loading Arm Gear to the position shown in [Fig. A21](#).**

Fig. A21



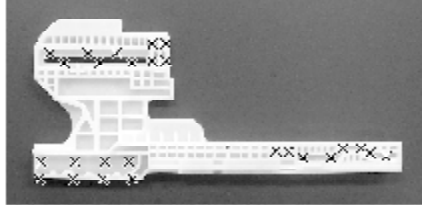
- 12. Install the Main Lever so that the convex portion on rear side of the Main Lever ([Fig. A23](#)) is fitted into the concave portion of Take-up Loading Arm Gear ([Fig. A21](#)), and install the Cut Washer as shown in [Fig. A24](#).**

Fig. A22

NOTE:

When install the replacement parts; apply the Grease (VFKS0081).

<Inside of Main Lever>



<Outside of Main Lever>

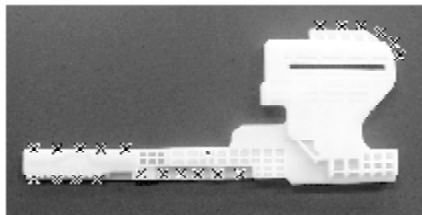


Fig. A23



Convex portion on rear side of the Main Lever

13. Push the Main Lever left ward to adjust the phase so that the hole of Main Lever is met with the hole of Chassis as shown in **Fig. A25**.

Fig. A24

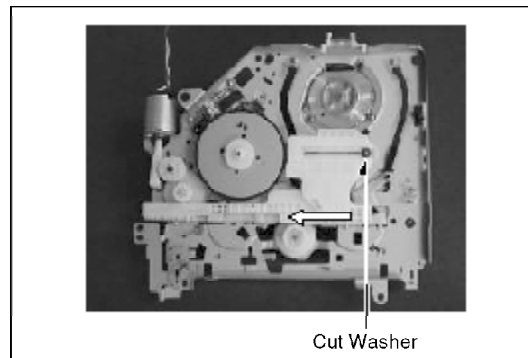
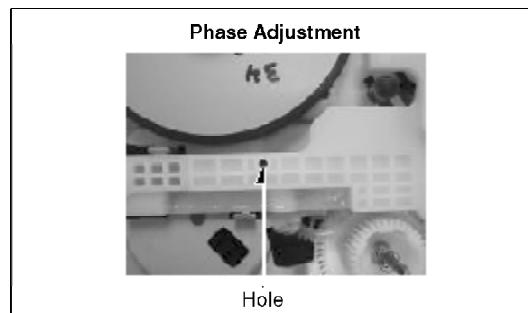


Fig. A25



14. Install the Change Lever Unit into the aperture of Change Gear.

Fig. A26

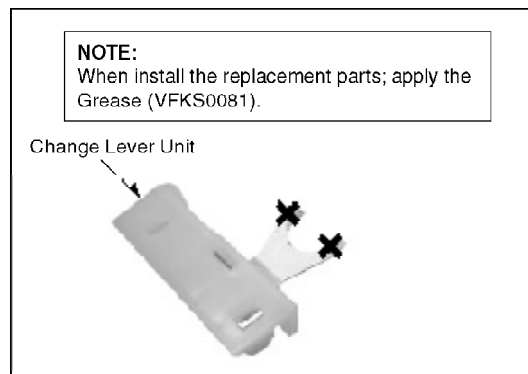
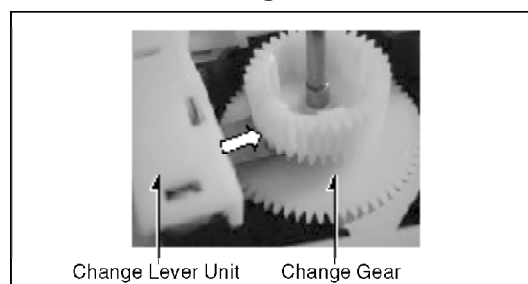
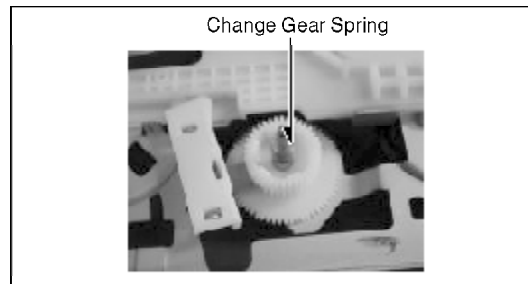


Fig. A27



15. Install the Change Gear Spring through the shaft for Change Gear.

Fig. A28

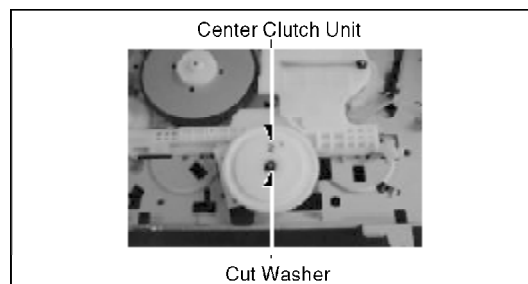


16. Install the Center Clutch Unit and the Cut Washer.

Note:

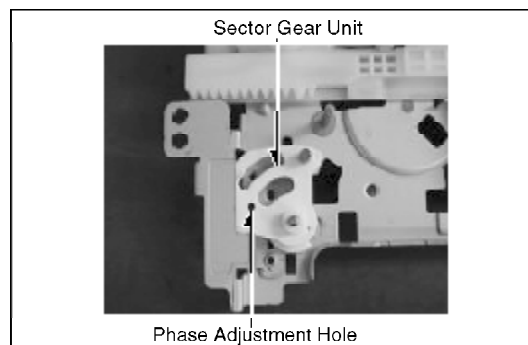
Keep paying attention to do not lose the Change Gear Spring and the Cut Washer.

Fig. A29



17. Install the Sector Gear Unit so that the Phase Adjustment Hole of Sector Gear Unit is met with the Adjustment Hole of Chassis.

Fig. A30



18. Install the Main Cam Gear so that the Phase Adjustment Hole of Main Cam Gear is met with the hole of Chassis, and install the Cut Washer.

Fig. A31

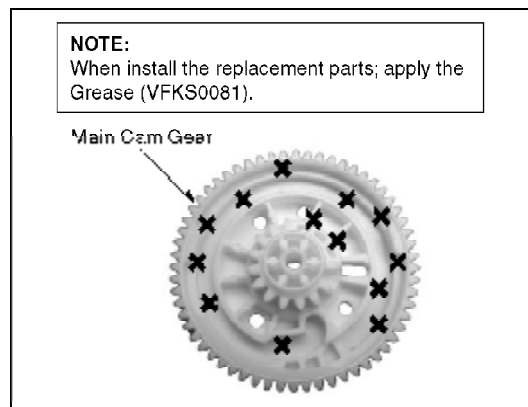
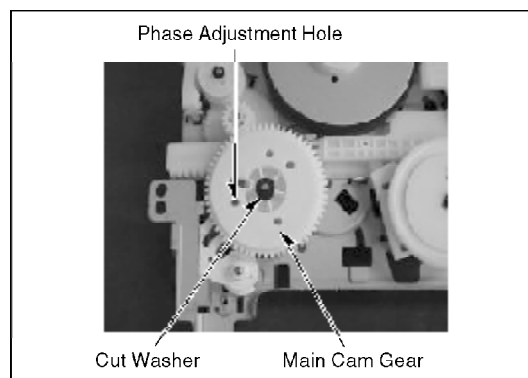


Fig. A32

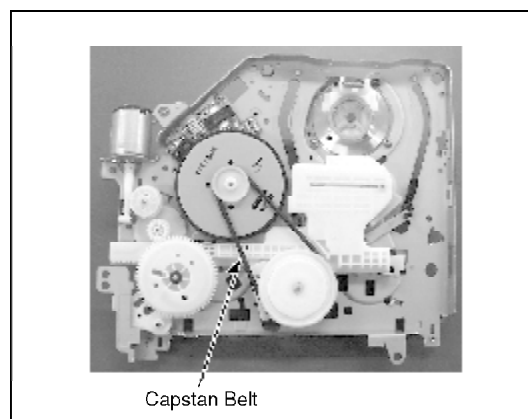


19. Install the Capstan Belt.

Caution:

Do not to twist the Capstan Belt.

Fig. A33



20. Install the Full Erase Head and turn it clockwise to Chassis by fit.

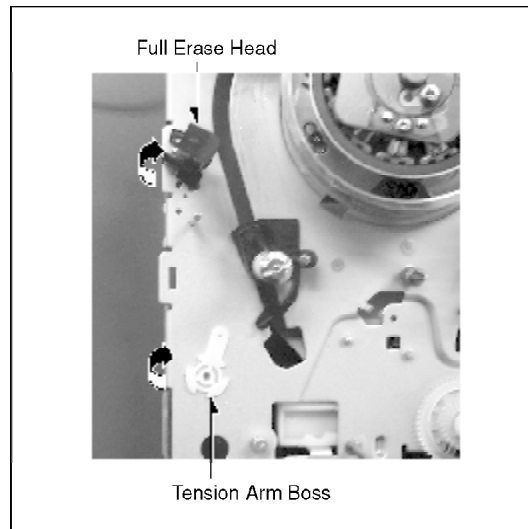
Caution:

Do not to scratch tape running surface.

21. Install the Tension Arm Boss and turn it clockwise to Chassis by

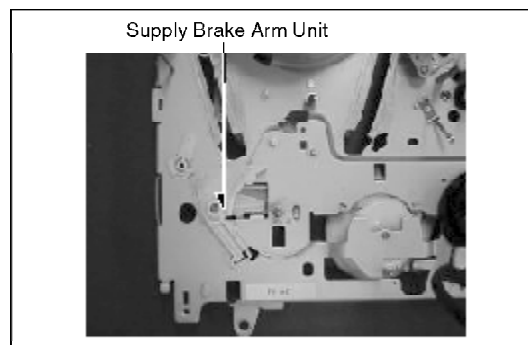
fit.

Fig. A34



22. Install the Supply Brake Arm Unit.

Fig. A35

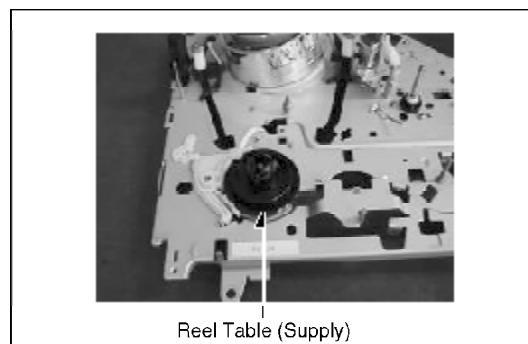


23. Install the Reel Table (Supply).

Caution:

Do not to touch brake surface of Reel Table.

Fig. F36



24. Install the Tension Arm Unit into the Tension Arm Boss.

Fig. A37

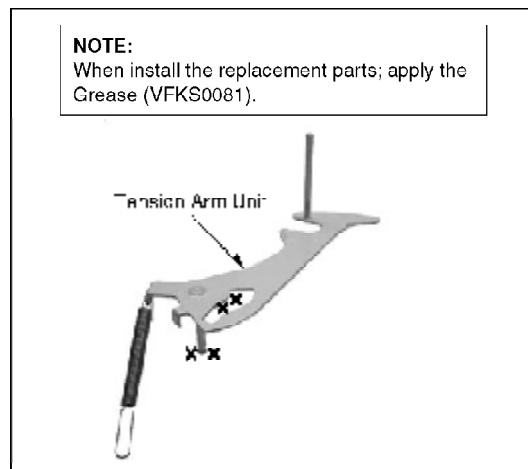
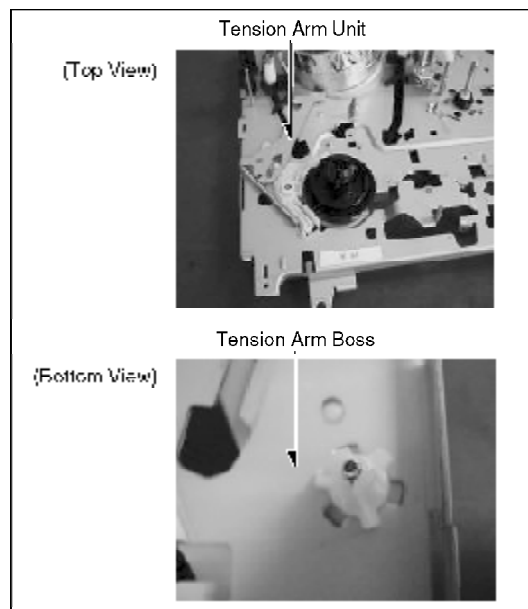
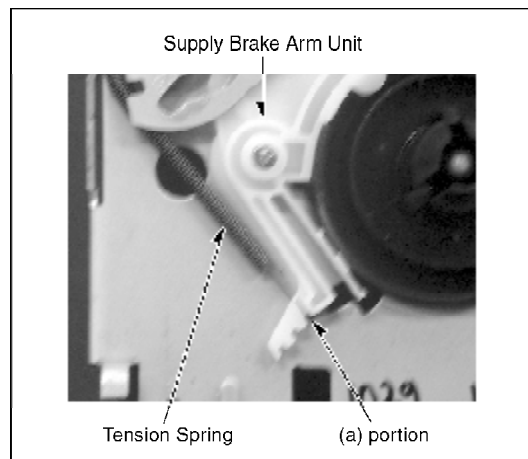


Fig. A38



25. Set the Tension Spring end to Supply Brake Arm Unit hook with tip end at (a) portion.

Fig. A39



26. Confirm that the Idler Gears are installed onto the Idler Arm, and install the Idler Arm to Chassis by fit.

Fig. A40

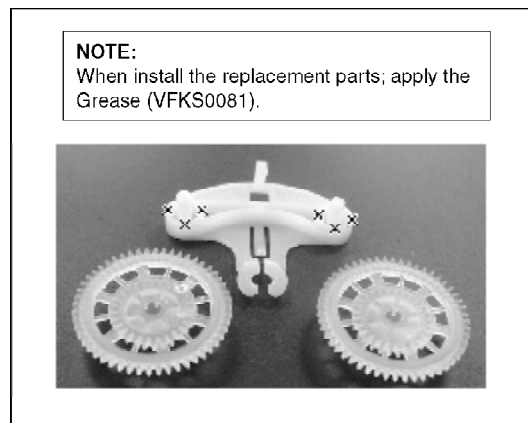
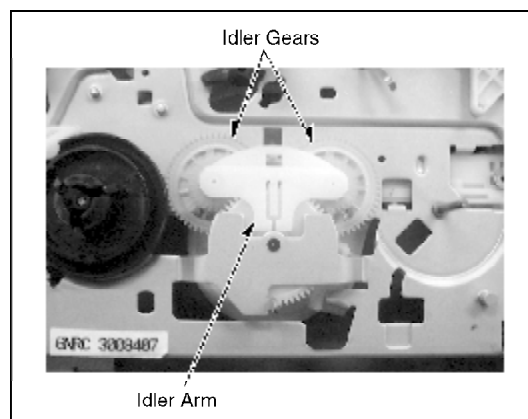


Fig. A41

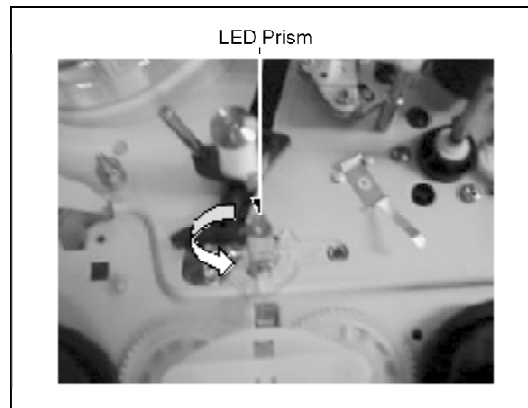


27. Install the LED Prism and turn it counter-clockwise to Chassis by fit.

Caution:

The LED Prism is easy to break, therefore treat it carefully.

Fig. A42

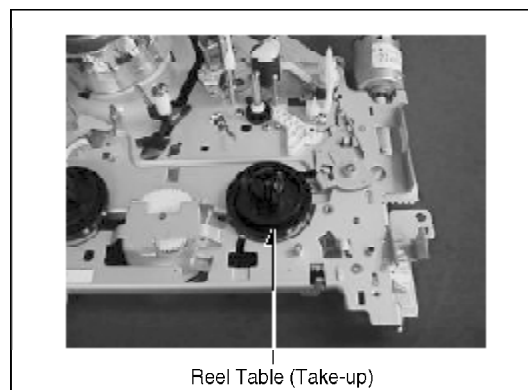


28. Install the Reel Table (Take-up).

Caution:

Do not to touch brake surface of Reel Table.

Fig. A43



29. Install the Take Up Brake Arm Unit, and then hook the Take Up Brake Spring to Chassis.

Fig. A44

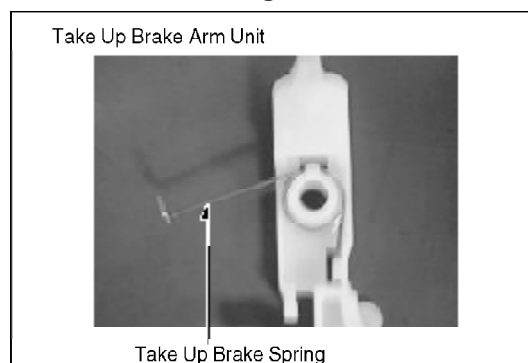
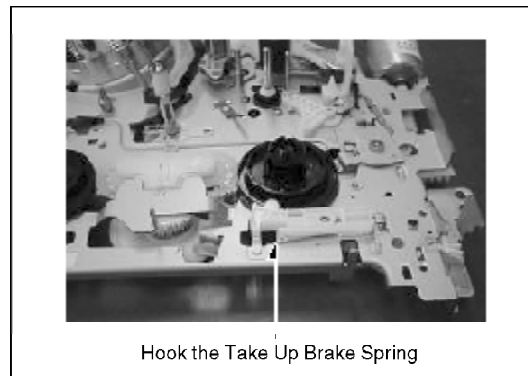
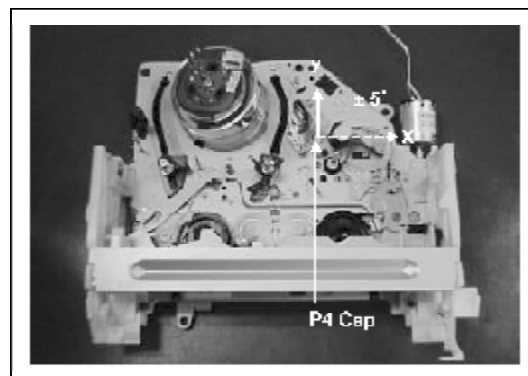


Fig. A45



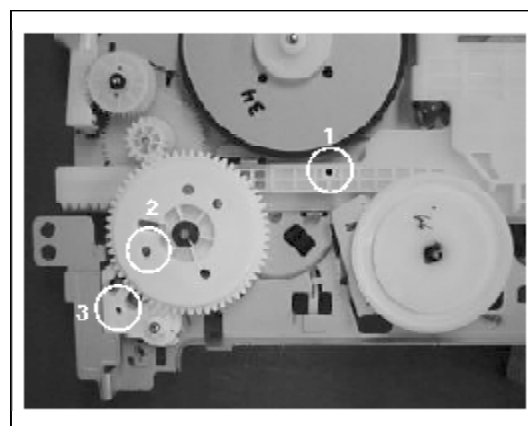
30. Install the P4 Cap so that the Direction of P4 Cap is on y-axis with tolerance $\pm 5^\circ$.

Fig. A46



31. Confirm the Mechanism Phases so that see through the Adjustment Hole and hole of Chassis at three Adjustment portions.

Fig. A47



7. MECHANICAL ADJUSTMENT PROCEDURE

7.1. TAPE RUNNING SYSTEM CLEANING

Cleaning the tape Transport path before adjusting of Mechanism Chassis. The detail portion as shown below.

Cleaning portions:

P0 Post, Tension Posts, FE Head, P2 Post, Supply Inclined Post, Cylinder Unit, Take-up Inclined Post, P3 Post, A/C Head, P4 Post, Pinch Roller, Capstan Shaft and P5 Post.

Note:

FE Head, Cylinder Unit, A/C Head and Capstan Shaft are more important parts and pay attention to clean them.

Caution:

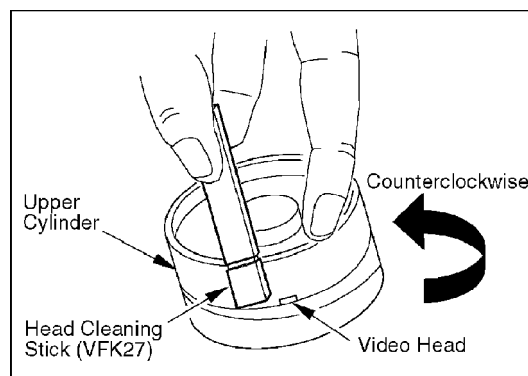
1. Handle each component with care.
2. This process is not necessary if the above contents are guaranteed.

7.1.1. CLEANING PROCEDURE FOR THE UPPER CYLINDER UNIT

1. While slowly turning the Upper Cylinder Unit counterclockwise by hand, gently rub the Video Heads with a Head Cleaning Stick (VFK27) moistened with Ethanol.

When using a Cleaning Cassette, make sure to use “DRY” type only and be aware that excessive use can shorten head life.

Fig. M1



Note:

1. Do not rub vertically or apply excess pressure to the Video Heads. Do not turn the Upper Cylinder Unit clockwise while cleaning.
2. After cleaning, use a Dry Head Cleaning Stick (VFK27) to remove any Ethanol remaining on the cylinder tape path. Otherwise, tape damage will occur.

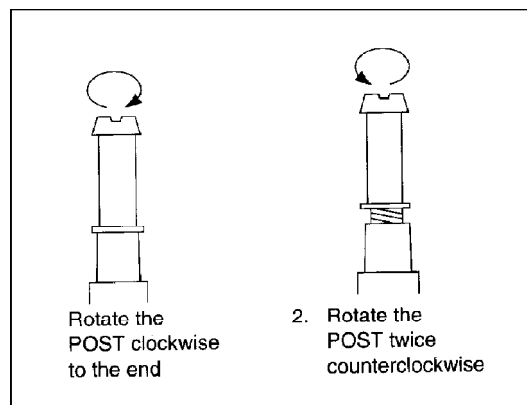
7.2. P2 AND P3 POST ADJUSTMENT (PREADJUSTMENT)

Equipment required:

Post Adjustment Screwdriver (VFK0329)

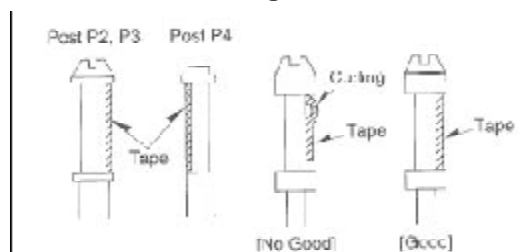
1. Remove the Top Plate.
2. Turn the Loading Motor unit until the unloading completes.
3. Rotate the P2 and P3 Posts clockwise to the end. (**Fig. M2**)
4. Rotate the P2 and P3 Posts twice counterclockwise. (**Fig. M2**)

Fig. M2



5. Playback the cassette tape and make sure that the edges of the tape are not curing at the bottom or top ends of the P2, P3 and P4 Posts as shown in **Fig. M3**.

Fig. M3



6. If the curing appears, readjust the P2 and P3 Posts.

7.3. TAPE INTERCHANGEABILITY ADJUSTMENT

Carry out the following procedures for Tape Interchangeability Adjustment to do it correctly and smoothly.

- 1. LINEARITY (P2/ P3 POST) ADJUSTMENT**
- 2. ADJUSTMENT OF P4 POST**
- 3. HEIGHT ADJUSTMENT OF A/C HEAD**
- 4. FINE-ADJUSTMENT OF A/C HEAD**
- 5. ADJUSTMENT OF X-VALUE (PREADJUSTMENT)**
- 6. FINE-ADJUSTMENT OF X-VALUE**

If the Tape Interchangeability Adjustment is not perfect, repeat the above procedures from 1 to 6.

CAUTIONS:

Turn the Auto-Tracking to off, and set the tracking control to center fixing position.

To make an Adjustment Mode for Tape Interchangeability, press the FF and CH DOWN buttons simultaneously 5 seconds to set the Service Mode. Then press the CH UP and CH DOWN buttons simultaneously to set the Tracking center mode.

Note:

- 1. During the Tracking center mode, “TRACKING CENTER” will be displayed on the monitor.**
- 2. To release from Tracking center mode, press the CH UP and CH DOWN buttons simultaneously.**

7.3.1. LINEARITY (P2 / P3 POST) ADJUSTMENT

Equipment required:
Alignment Tape (VFMS000H6)
Post Adjustment Screwdriver (VFK0329)

- 1. Connect the oscilloscope to the output of the Head Amp as shown in Fig. M4.**

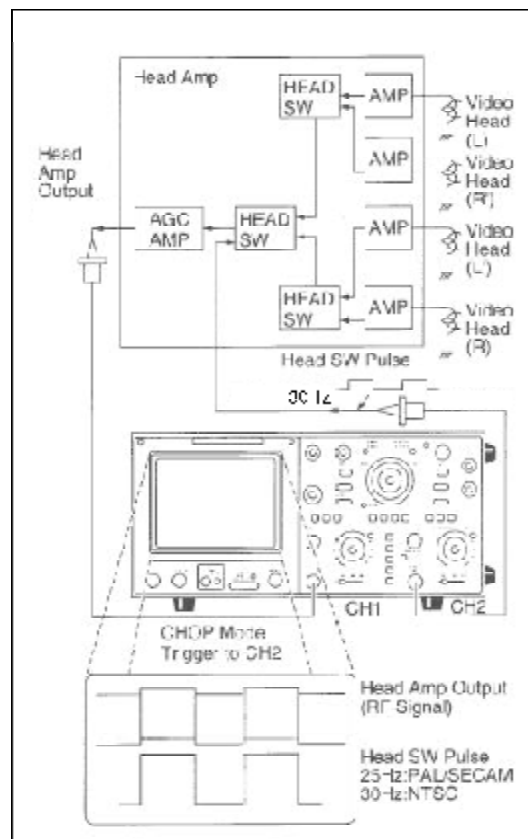
NOTE:

- 1. To get a stable waveform of the Head Amp output (RF envelope**

signal) on the oscilloscope, use the head switching pulse as a triggering signal as shown in Fig. M4.

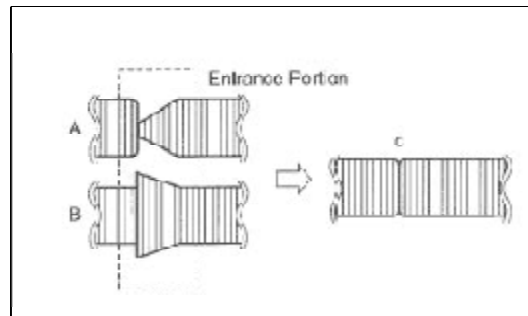
2. For video models with FM Audio, make the LINEARITY (P2/ P3 POST) adjustment based FM Audio Envelope.

Fig. M4 Connection of Oscilloscope



2. Playback the Alignment Tape.
3. If the RF envelope appears like example “A” or “B” in [Fig. M5](#), then adjustment of the tape guide post (P2: Entrance) is necessary.
4. Adjust the Tape Guidepost (P2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown in [Fig. M5](#) “C”.

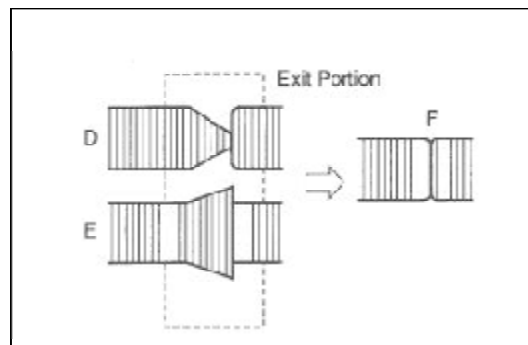
Fig. M5



5. If the envelope appears like “D” or “E” in [Fig. M6](#), then adjustment of the tape guide post (P3: Exit) is necessary.

6. Adjust the tape guidepost (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in [Fig. M6](#) “F”.

Fig. M6



7. Keep pressing the tracking up/down (up or down buttons on the remote controller unit). The output envelope should vary nearly parallel with other condition as shown in [Fig. M7](#).

8. Set the tracking control into center fix position and adjust for maximum RF envelope, whilst being as flat as possible.

Fig. M7

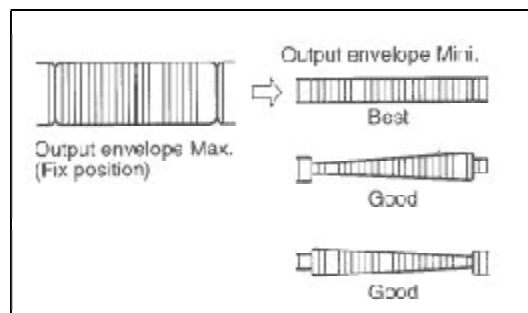
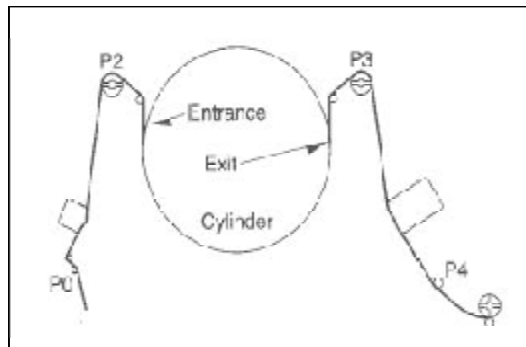


Fig. M8



Aim for P2, P3 Posts Adjustment

Fig. M9

Envelope	Post Name	Adjustment Method
	P2 Post	Turn P2 Post counter-clockwise (Approx. 1/2 revolutions)
	P2 Post	Turn P2 Post clockwise (Approx. 1/4 revolutions)
	P3 Post	Turn P3 Post clockwise (Approx. 1/2 revolutions)
	P3 Post	Turn P3 Post counter-clockwise (Approx. 1/4 revolutions)
	P2/P3 Post	Turn P2 Post clockwise (Less than revolution) Turn P3 Post counter-clockwise (Less than revolution)

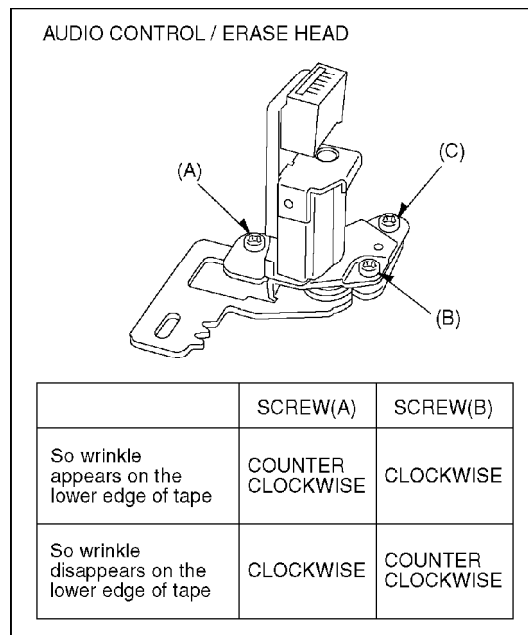
7.3.2. ADJUSTMENT OF P4 POST

1. Playback the Alignment Tape.
2. Rotate the screw (A) or (B) until the wrinkle appears on the lower edge of tape at P4 Post.
3. Rotate the screw (A) or (B) until the wrinkle just disappears on the lower edge of tape at P4 Post.
4. Connect the oscilloscope to audio output terminal.
5. Rotate the screw (C) until Normal Audio signal is maximized.

NOTE:

1. The relation between the rotation direction of screws (A) and (B) and the condition of wrinkle on the lower edge at P4 Post as shown in **Fig. M10**.
2. Make sure that there is not the inclined wrinkle between P4 Post and Pinch Roller.

Fig. M10

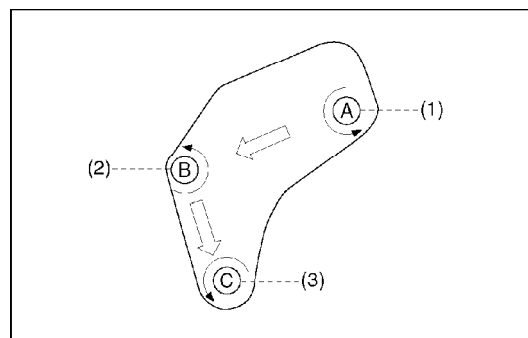


7.3.3. HEIGHT ADJUSTMENT OF AUDIO CONTROL / ERASE HEAD

< When moving the Audio Control/ Erase Head up >

1. Rotate the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2. Rotate the screw (B) counterclockwise until the wrinkle just disappears on the lower edge of tape at P4 Post.
3. Rotate the screw (C) counterclockwise until the Normal Audio signal is maximized.

Fig. M11

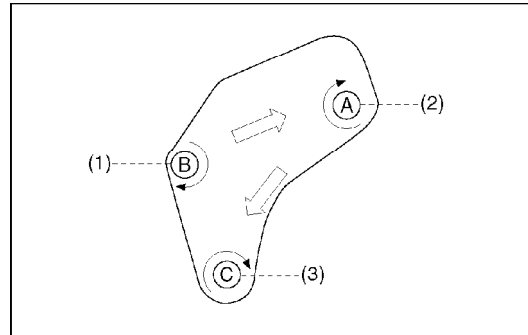


< When moving the Audio Control/ Erase Head down >

1. Rotate the screw (B) clockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2. Rotate the screw (A) clockwise until the wrinkle just disappears

- on the lower edge of tape at P4 Post.
3. Rotate the screw (C) clockwise until the Normal Audio signal is maximized.

Fig. M12



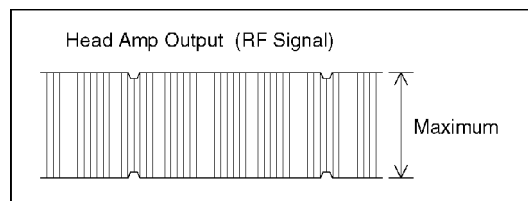
7.3.4. FINE-ADJUSTMENT OF AUDIO CONTROL / ERASE HEAD

1. Connect the oscilloscope to the output of the Head Amp as shown in Fig. M4.
2. Playback the Alignment Tape.
3. Make sure that the condition of the wrinkle at P4 Post. If the condition of the wrinkle is out of specification, P4 Post adjustment has to be performed as follows.
 Turn the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.
 Turn screw (A) clockwise until the wrinkle disappears on the lower edge of tape at P4 Post.
4. Turn the screw (C) until the Normal Audio signal is maximized.

NOTE:

Make sure that the audio output does not increase when push the upper and lower edges of tape around Audio Control/ Erase Head.

Fig. M13



7.3.5. ADJUSTMENT OF X-VALUE (PREADJUSTMENT)

Equipment Required:
H-Position Adjustment Gear Driver (VFK0330)
Specification: Less than 15msec.

- 1. Connect the oscilloscope to the Normal Audio output and the Video output.**
Both output signals should be fixed by the external trigger.
- 2. Playback the Alignment Tape and set the tracking control into center fix position.**
- 3. Adjust Audio Control/ Erase Head position by the H-Position Adjustment Gear Driver (VFK0330) to meet the signal fault portion of the Normal Audio output and the Video output signals (Less than 15msec.).**
- 4. After meeting the signal fault portion, Audio Control/ Erase Head position by the H-Position Adjustment Gear Driver (VFK0330) until the video envelope is maximized.**

Fig. M14

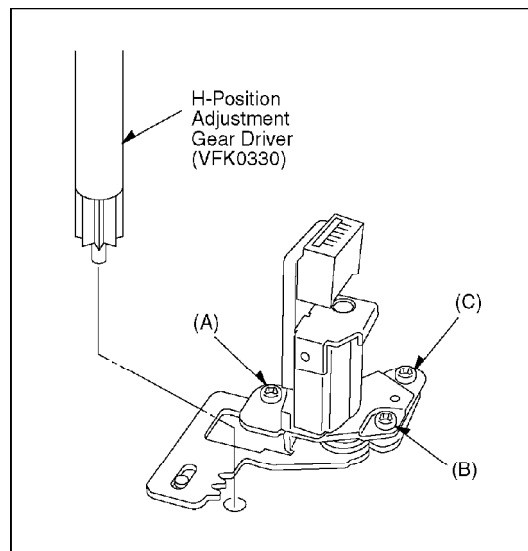
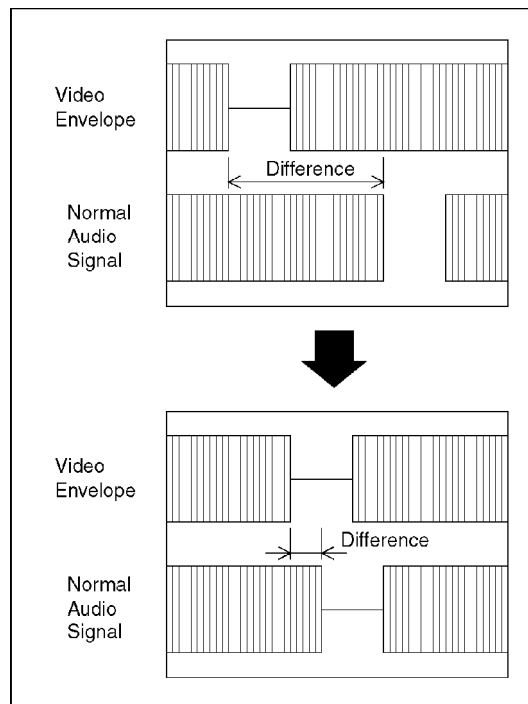


Fig. M15



7.3.6. FINE-ADJUSTMENT OF X-VALUE

Equipment Required:
H-Position Adjustment Gear Driver (VFK0330)

1. Connect the oscilloscope to the Normal Audio output and the Video output.
 Both output signals should be fixed by the External trigger.
2. Playback the Alignment Tape and set the tracking control into center fix position.
3. Adjust Audio Control/ Erase Head position by the H-Position Adjustment Gear Driver (VFK0330) until the video envelope level is maximized at the tracking center fix position.

NOTE:

During X-Value Fine Adjustment, in case the video envelope level becomes 0, Pre-adjustment of X-Value should be adjusted again due to it is possible to vary the X-Value adjustment.

7.4. PG SHIFTER ADJUSTMENT

<VCR type>

Purpose: Determine the Video Head Switching Point during Playback.

Symptom of May cause Head Switching Noise and/ Misadjustment or Vertical Jitter.

:

Test Point : TP3001 (Main C.B.A.),
TP6205 (Main C.B.A.)

Specification $T = 6 H \pm 0.5 H$ (0.38 ms \pm 0.03 ms)

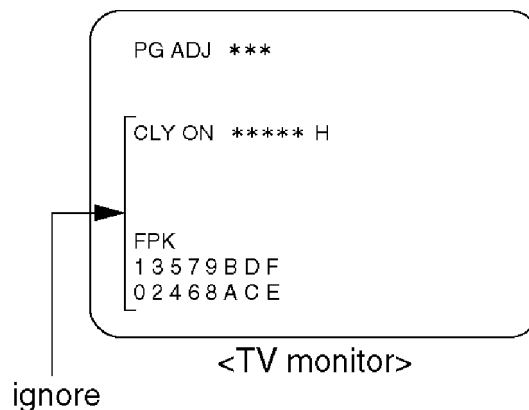
:

Mode : SP Playback

Equipment : Oscilloscope,
VHS Alignment Tape (VFMS0003H6),
TV monitor

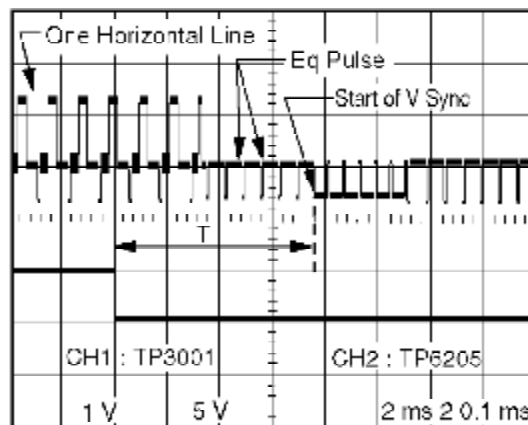
1. Insert the VHS Alignment Tape. Enter service mode by pressing and holding FF and CH DOWN buttons on VCR together for more than 5 seconds.
2. Play back SP mode. Then, press 100 button on the remote to enter EVR PG SHIFTER ADJUSTMENT mode. PG ADJUSTMENT screen will appear on the TV Monitor.

Fig. EA1



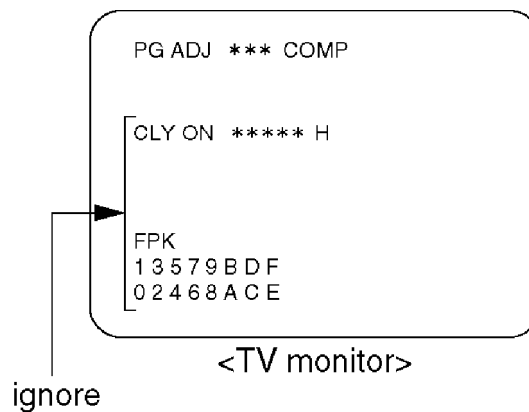
3. Connect the channel-1 scope probe to TP3001 and the channel-2 scope probe to TP6205. Used TP6205 as a trigger
4. Adjust value so that the trailing edge of the head switching pulse is placed $6 H \pm 0.5 H$ (0.38 ms \pm 0.03 ms) before the start of the vertical sync pulse by pressing CH UP and CH DOWN buttons on the remote.

Fig. EA2



5. After adjustment is completed, press REC button on the remote. Then " COMP " will appear on the TV monitor and adjusted value will be written to Memory IC (IC6004).

Fig.EA3



6. Press STOP button on the remote to release from EVR PG SHIFTER ADJUSTMENT MODE.

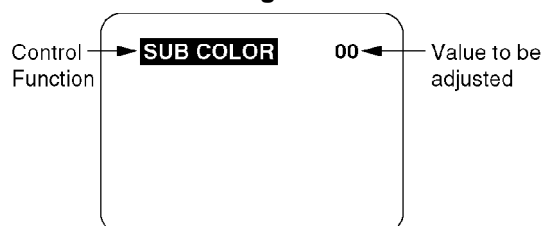
<COMBO type>

HOW TO ENTER EVR ADJUSTMENT MODE

Press and hold STOP, PLAY, and VOL- buttons on the unit together over 5 seconds with no cassette inserted.

The adjustment overlay will appear.

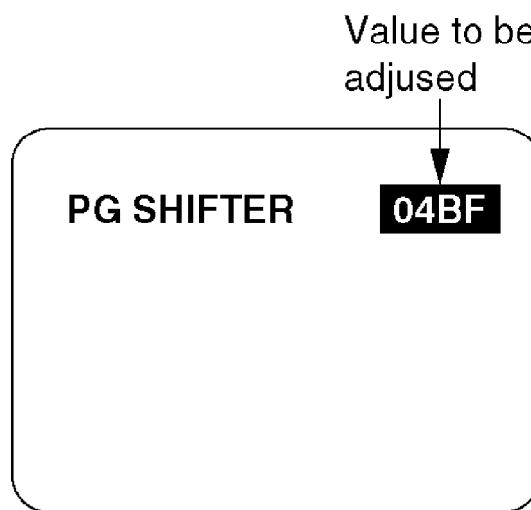
Fig. EB1



HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE

1. Enter EVR adjustment mode.
2. Press CH UP/DOWN key on the remote control to select “PG SHIFTER”.
3. Insert the VHS Alignment Tape and playback in SP mode. The adjustment overlay will appear.
4. Press VOL+ key on the remote control to select the value.

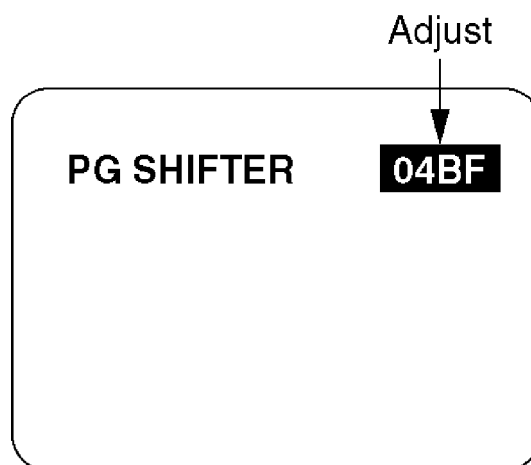
Fig. EB2



How to adjust:

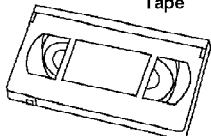
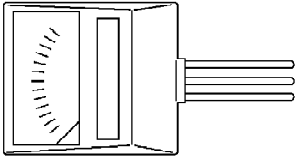
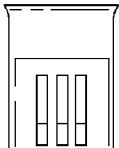



Press CH UP key on the remote control to adjust the value.

Fig. EB3



How to release from EVR PG Shifter Adjustment Mode:
Press the POWER button OFF.
The adjusted value will be written Memory IC (IC6004).

7.5. SERVICE FIXTURES AND TOOLS

VFMS0003H6 VHS Alignment Tape  <div> <div>Video</div> <div>Audio</div> <div>Color Bar & Monoscope</div> <div>6kHz(MONO)</div> </div>	Back Tension Meter (Made in USA., Purchase Locally) 	VFK27 Head Cleaning Stick 
VFK0330 H-Position Adjustment Driver 	VFKS0081 Grease 	VFK0329 Post Adjustment Driver 
VFK1301 Silicone Grease 